4-CHANNEL POWER AMPLIFIER

KAC-943

SERVICE MANUAL

KENWOOD

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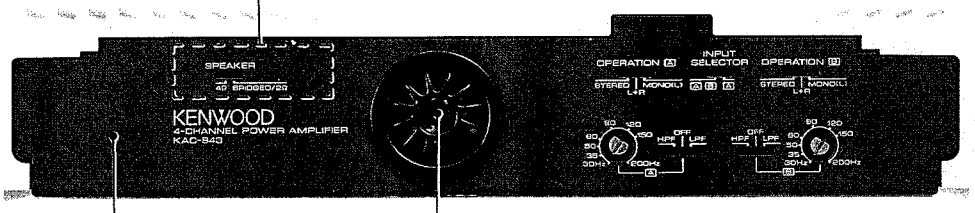
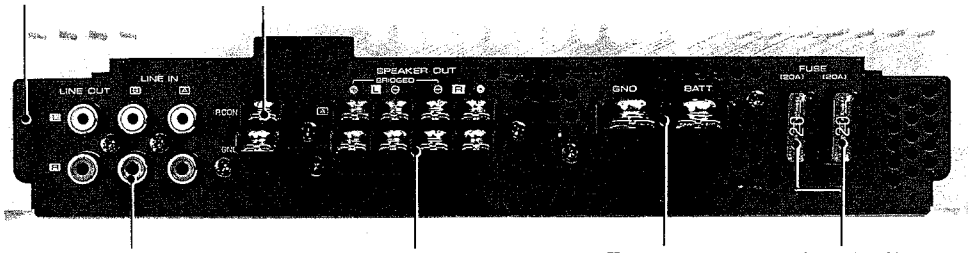


Slide switch (K, M type only)
(S62-0836-08)

Front panel
K, M type : (A64-0159-08)
E type : (A64-0160-08)

Fan
(F09-1208-05)



Rear panel
(A84-0027-08)

Terminal (2P)
(E70-0813-08)

RCA pin jack
(E63-0817-08)

Terminal (8P)
(E70-0809-08)

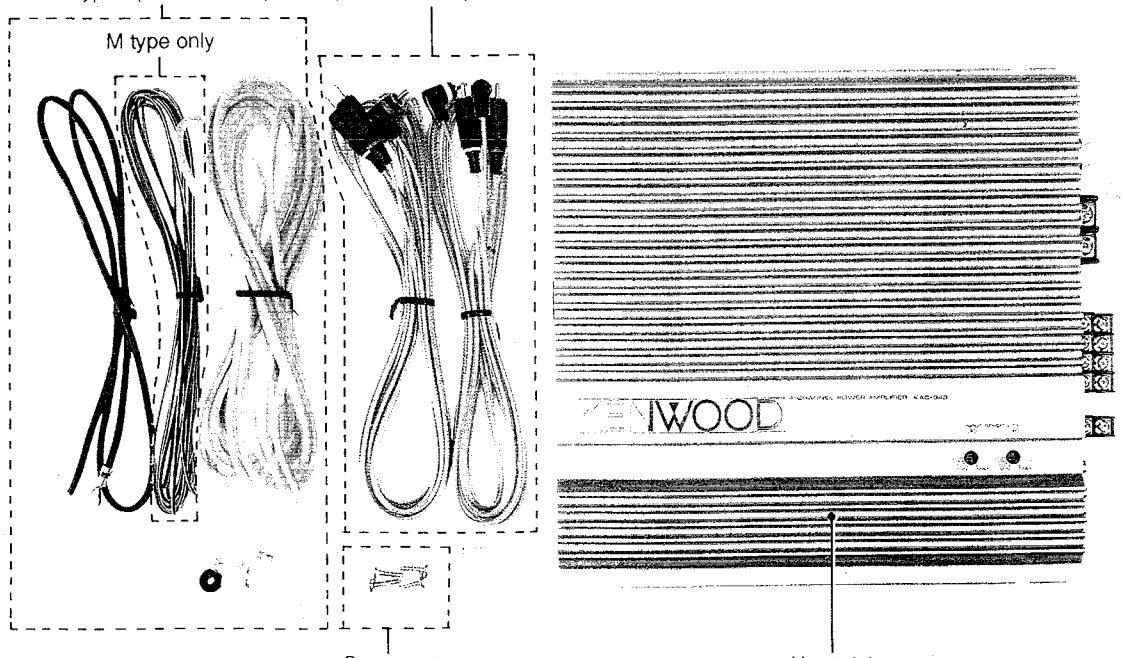
Terminal (2P)
(E70-0812-08)

Fuse (20A)
(F05-2038-05)

Cord set
E type : (E30-4100-08)
M type : (E30-4101-08)

M type only

RCA cord set (M type only)
(E30-4099-08)



Screw set
(N99-1577-15)

Heat sink
(F01-1430-08)

KAC-943

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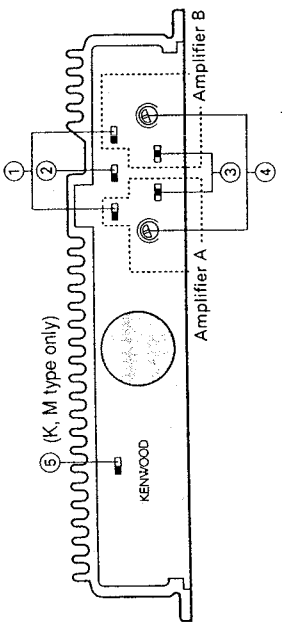
CONTROLS

■ KAC-943

This is a 4-channel amplifier including 2 stereo amplifiers in a body. One amplifier is referred to as amplifier A and the other is amplifier B. This unit is compatible with a large variety of systems by combining the switches and functions described in the following.



①Operation switch
This switch allows to select the amplification method of input signals.

- **STEREO position:**
  The input left and right signals are amplified separately. Use this position when the unit is used as a stereo amplifier.
- **L + R position:**
  The input left and right signals are combined before being amplified. Use this position when the unit is used for subwoofer speakers or the L + R (monaural) sound is required.
- **MONO (L) position:**
  The input left signal is amplified twice the normal boost level. Use this position when the unit is used as a high-power monaural amplifier.
  (The input right signal is not output.)

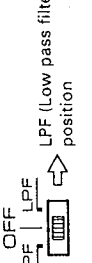
OPERATION A
STEREO | MONO(L) L+R

②Input selector
This switch selects the input method of the signals to be amplified by amplifiers A and B.

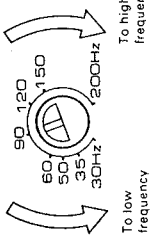
- **A B position:**
  Amplifies both of the signals input to amplifiers A and B.
- **A position:**
  Amplifies only the signal input amplifier A with both amplifiers A and B.

INPUT SELECTOR
A B A

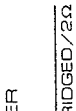
③Filter switch
This switch allows to switch the filter function to High pass filter ON. Low pass filter ON or to OFF.

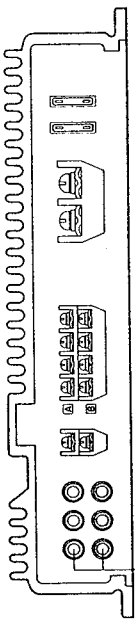


④Filter frequency control (12 dB/oct.)
When the Filter switch ③ is in an ON position, this control allows to adjust the filter threshold frequency.

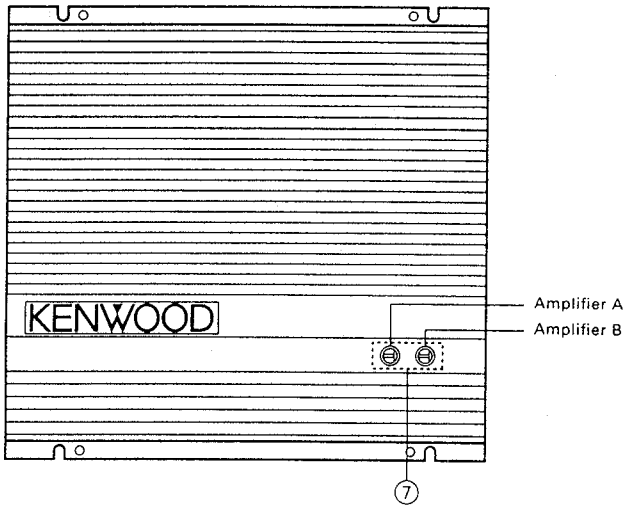


⑤Speaker switch (K, M type only)
When the impedance of connected speaker is 4 Ω, set the switch to the left. When the impedance is 2 Ω or the output is bridge type, set the switch to the right.





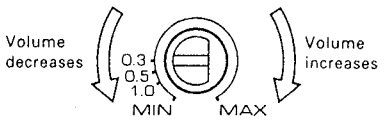
⑥Line output
These jacks output respectively the signals input to amplifiers A and B.
They always output the stereo signals regardless of the position of the OPERATION switch.



⑦Input sensitivity control

Adjust the control according to the pre-out level of the center unit connected to this unit.

When the pre-out level of the center unit is between 800 and 1000 mV, set the input sensitivity control to the 0.3 V position.



Center unit pre-out level	Amplifier input sensitivity
300 mV	MAX
800~1000 mV	0.3 V

NOTE

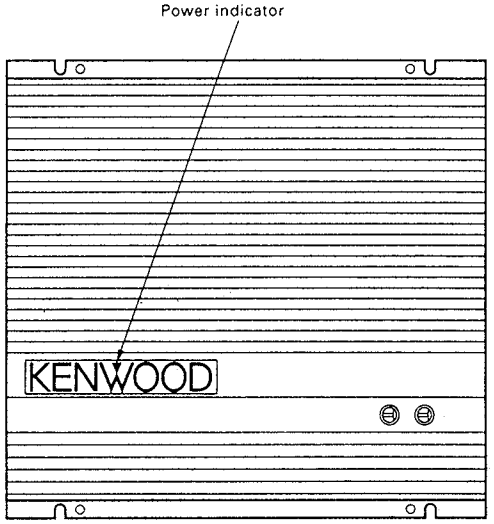
Refer to "SPECIFICATIONS" on the center unit's instruction manual about the Pre-out level.

Protection function

- This unit is equipped with a protection function for protecting this unit and your speakers from various accidents or problem that can occur.
- When the protection function activates, the unit stops operating and the power indicator lights green to indicate that the protection function is activated.

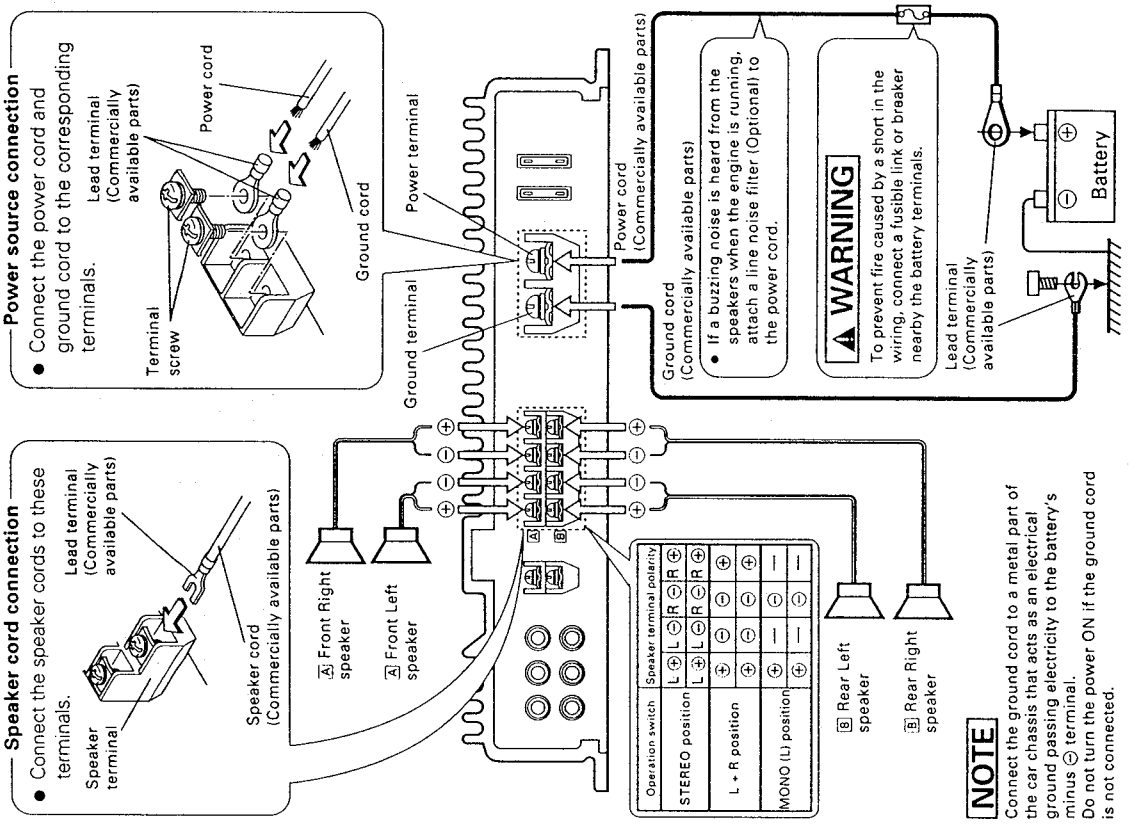
The protection function activates in the following situations:

- When a speaker output contacts ground.
- When the unit malfunctions and a DC signal is sent to the speaker outputs.
- When the temperature of internal parts exceeds 120°C (248°F). (When the temperature exceeds 80°C (176°F), the cooling fan operate to cool the unit. However, if the temperature continues to rise regardless of the cooling fan operation, the protection function will activate to shut down the unit.)
- When the ground lead of the center unit (Cassette-receiver, CD receiver, etc.) or this unit is not connected to a metal part serving as an electrical ground passing electricity to the battery's minus ⊖ terminal. (In this case, the power indicator does not light.)

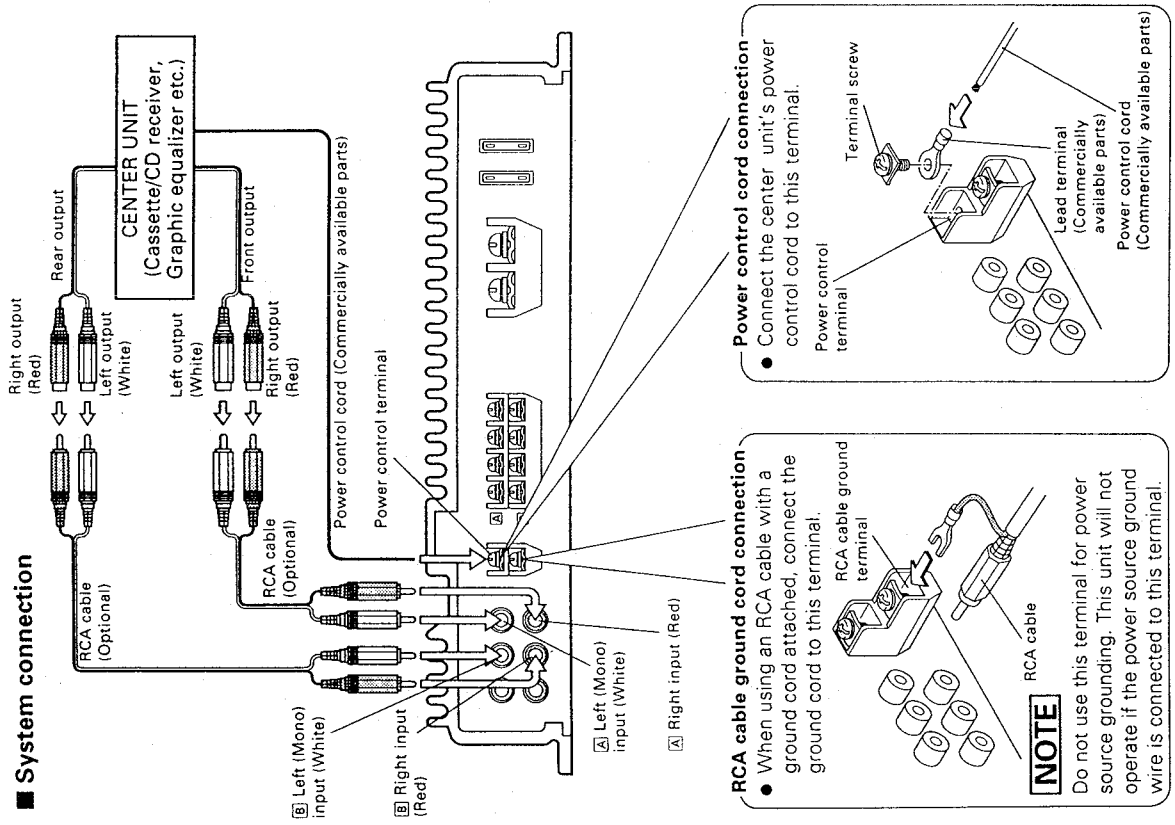


CONNECTIONS

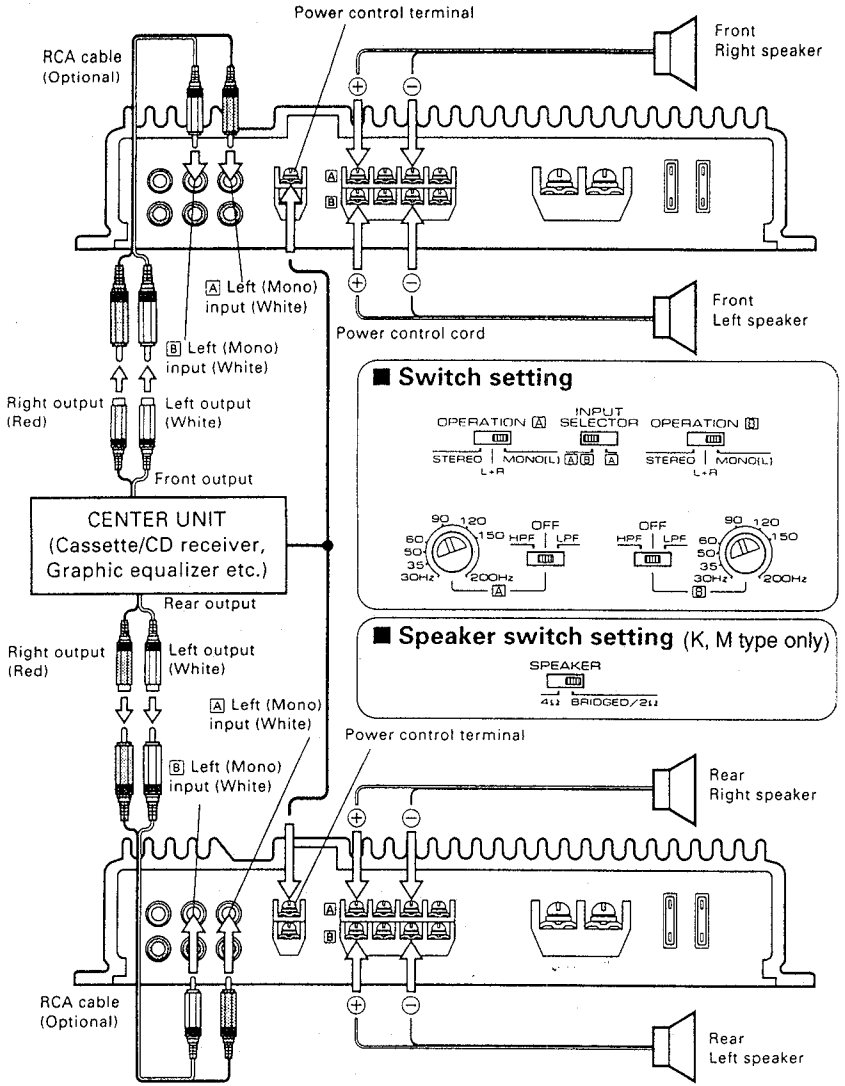
■ Power and Speakers cord connection


Power source connection
● Connect the power cord and ground cord to the corresponding terminals.
Lead terminal (Commercially available parts)
Power cord
Terminal screw
Ground cord
Power terminal
Ground terminal
Power cord (Commercially available parts)
Ground cord (Commercially available parts)
● If a buzzing noise is heard from the speakers when the engine is running, attach a line noise filter (Optional) to the power cord.
⚠ WARNING
To prevent fire caused by a short in the wiring, connect a fusible link or breaker nearby the battery terminals.
Lead terminal (Commercially available parts)
Battery
Speaker cord connection
● Connect the speaker cords to these terminals.
Lead terminal (Commercially available parts)
Speaker terminal
Speaker cord (Commercially available parts)
A Front Right speaker
A Front Left speaker
Operation switch
Speaker terminal polarity
STEREO position
L ⊕ L ⊖ R ⊖ R ⊕
L + R position
L ⊕ L ⊖ R ⊖ R ⊕
MONO (L) position
B Rear Left speaker
B Rear Right speaker
NOTE
Connect the ground cord to a metal part of the car chassis that acts as an electrical ground passing electricity to the battery's minus ⊖ terminal.
Do not turn the power ON if the ground cord is not connected.

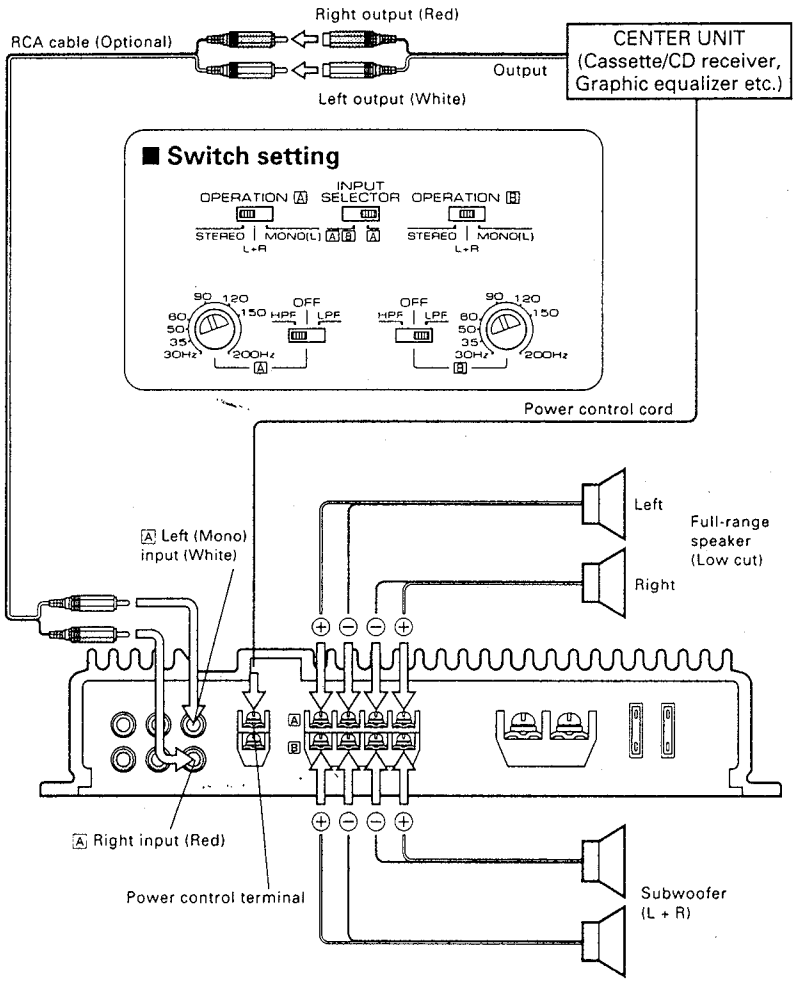
■ System connection


CENTER UNIT (Cassette/CD receiver, Graphic equalizer etc.)
Rear output
Front output
Right output (Red)
Left output (White)
Left output (White)
Right output (Red)
RCA cable (Optional)
RCA cable (Optional)
Power control cord (Commercially available parts)
Power control terminal
B Left (Mono) input (White)
B Right input (Red)
A Left (Mono) input (White)
A Right input (Red)
Power control cord connection
● Connect the center unit's power control cord to this terminal.
Terminal screw
Power control terminal
Lead terminal (Commercially available parts)
Power control cord (Commercially available parts)
RCA cable ground cord connection
● When using an RCA cable with a ground cord attached, connect the ground cord to this terminal.
RCA cable ground terminal
RCA cable
NOTE
Do not use this terminal for power source grounding. This unit will not operate if the power source ground wire is connected to this terminal.

System example 1. **When two KAC-943 are used as 2-channel amplifiers, a high power 4-channel amplifier can be configurated.**

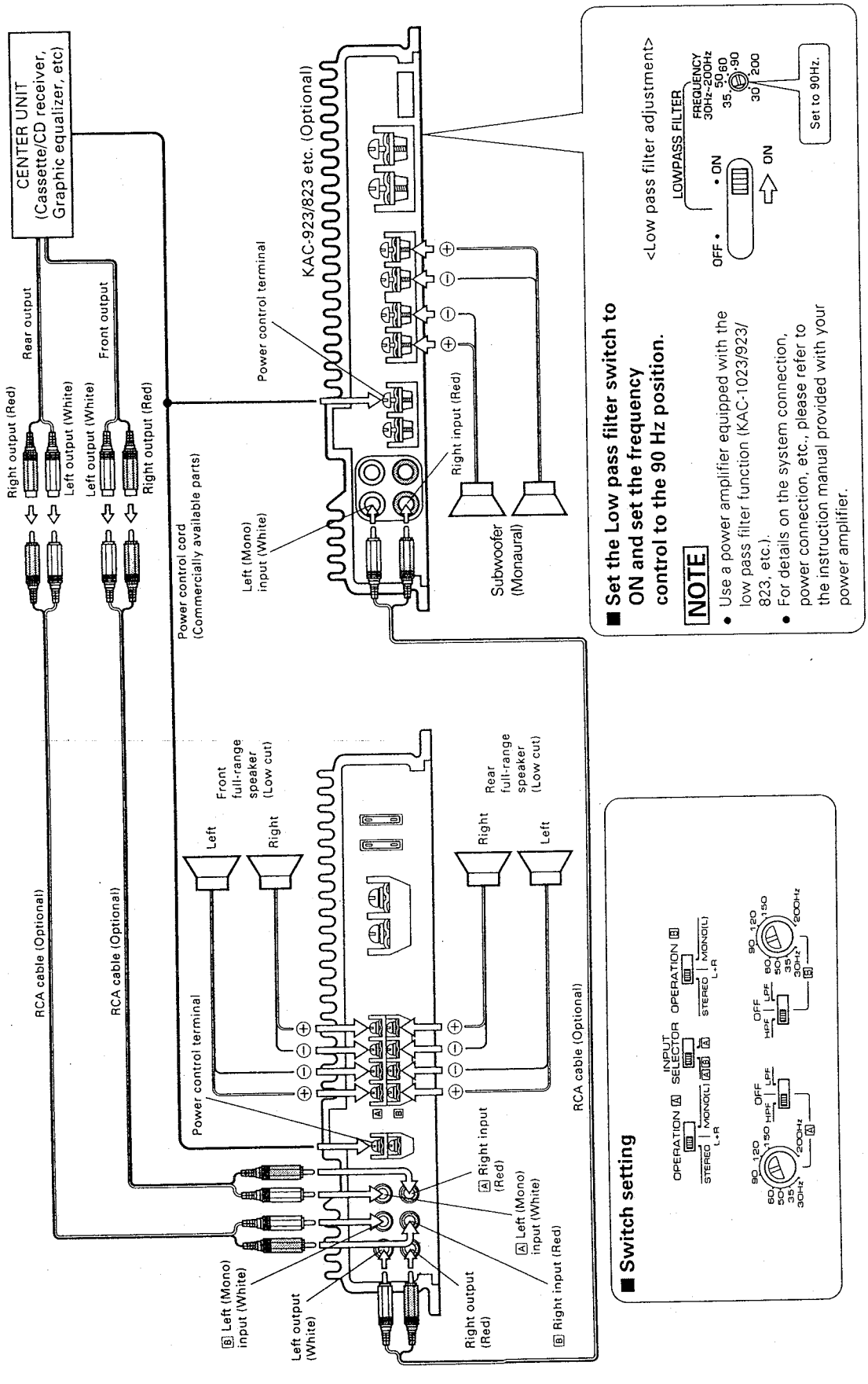


System example 2. **A multi-amplifier system can be formed with a single unit. With amplifier A, use the high pass filter and connect full-range speakers to output 90 Hz or more from them. With amplifier B, use the low pass filter and connect subwoofers to output 90 Hz or less from them.**



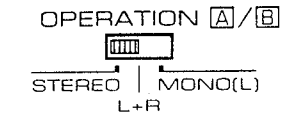
CONNECTIONS

System example 3. **Using the Line output jacks, a subwoofer is added to the system to output 90 Hz or less from them.**



Only using coils and capacitors in the stereo 4-channel speaker system (refer below), a subwoofer can be added to the system.

< Operation switch setting >

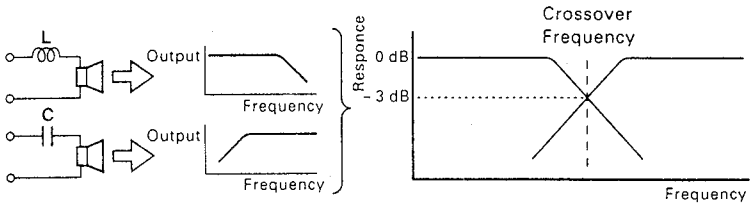


< Speaker switch setting >

(K, M type only)

- **Characteristics of coil and capacitor**
  - Coil (L): Passes low frequencies and blocks high frequencies. (Low pass)
  - Capacitor (C): Passes high frequencies and blocks low frequencies. (High pass)

■ 6dB/octave for High and Low pass filter



■ Table of content for 6dB/octave

Cross over frequency	Speaker impedance			
	2 ohm		4 ohm	
	L (Coil)	C (Capacitor)	L (Coil)	C (Capacitor)
80 Hz	4.0 mH	1000 μF	8.0 mH	500 μF
100 Hz	3.2 mH	800 μF	6.4 mH	400 μF
150 Hz	2.1 mH	530 μF	4.2 mH	270 μF
200 Hz	1.6 mH	400 μF	3.2 mH	200 μF

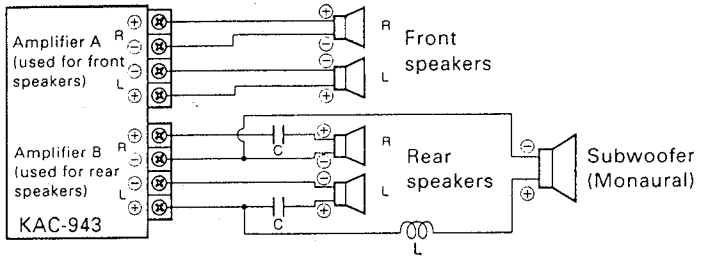
- If the coils and capacitors are not available in the values listed, coils and capacitors with similar or close values can be used without affecting the performance in practical use.
- Coils and capacitors not listed in the above table can be determined using the following formulas.

$$C=\frac{159000}{fc \times R}(\mu F) \qquad L=\frac{159 \times R}{fc}(mH)$$

fc=Cut of Frequency (Hz) R=Speaker Impedance (Ω)

■ SYSTEM EXAMPLES

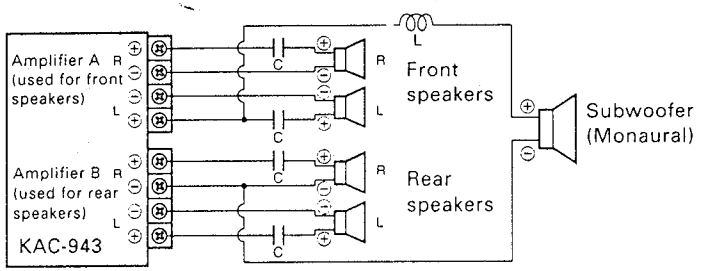
- **When a subwoofer is added to the rear speaker system**



NOTE

Using the TRI-MODE PASSIVE CROSSOVER NETWORK "KPX-T120" (Optional) makes the system's wiring easier.

- **When a subwoofer is added to the whole speaker system**



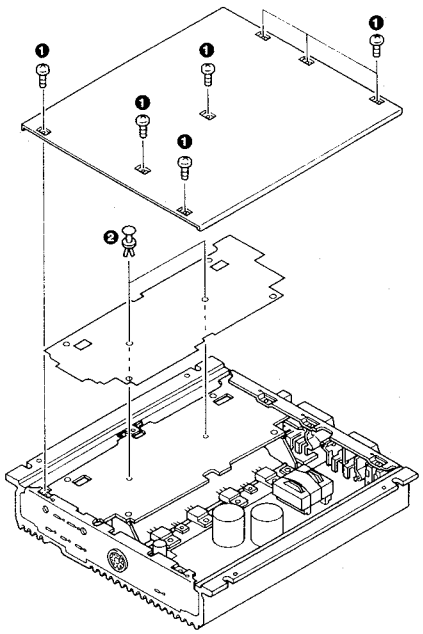
* The subwoofer is not affected by the controls on the center unit.

⚠ CAUTION

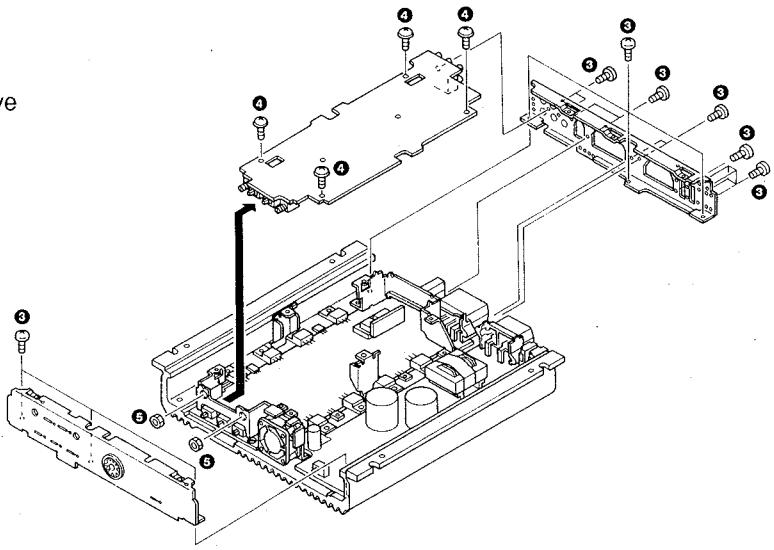
Be sure that the combined impedance of your speaker system as seen from the KAC-943 is at least 2 ohms. An impedance of less than 2 ohms will damage the amplifier.

DISASSEMBLY FOR REPAIR

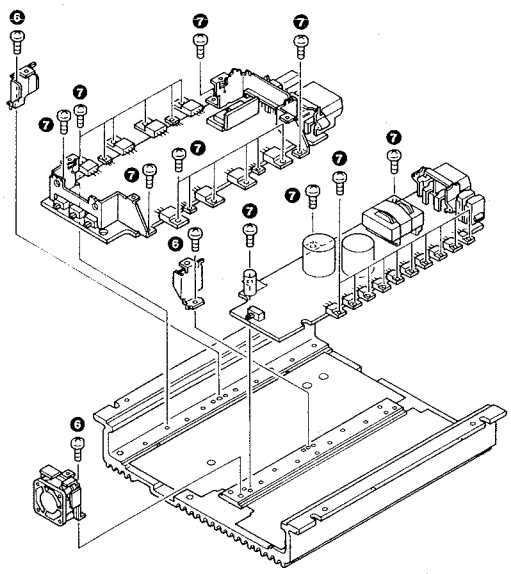
1. Remove the 7 screws (❶) and remove the bottom panel.
2. Remove the 2 rivets (❷) and remove the insulation sheet.



1. Remove the 18 screws (❸) and remove the front and rear panels.
2. Remove the 4 screws (❹) and 2 nuts (❺), and remove the circuit board.

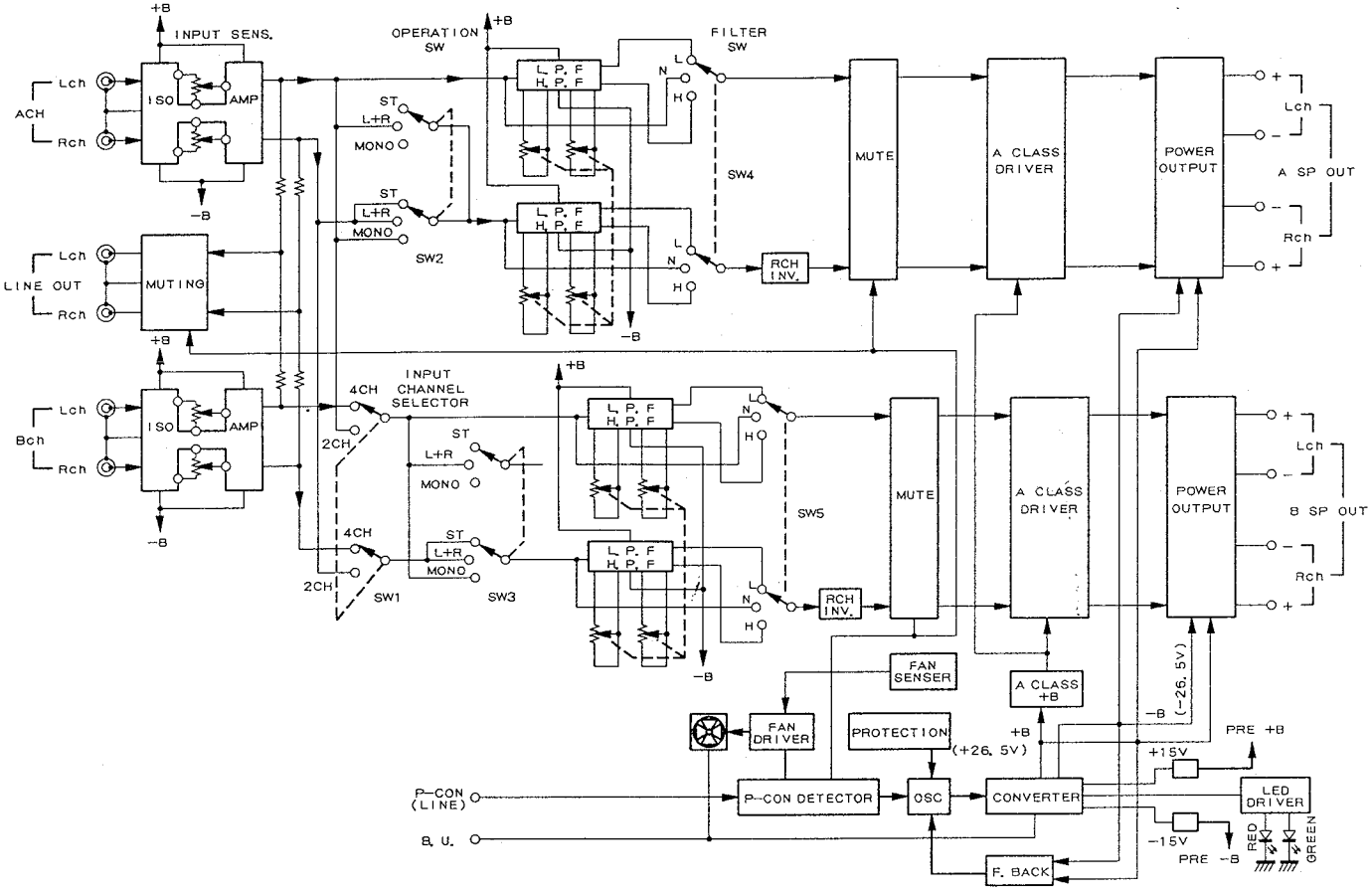


1. Remove the 3 screws (❻) and remove the fan motor and brackets.
2. Remove the 29 screws (❼) and remove the main amplifier board.

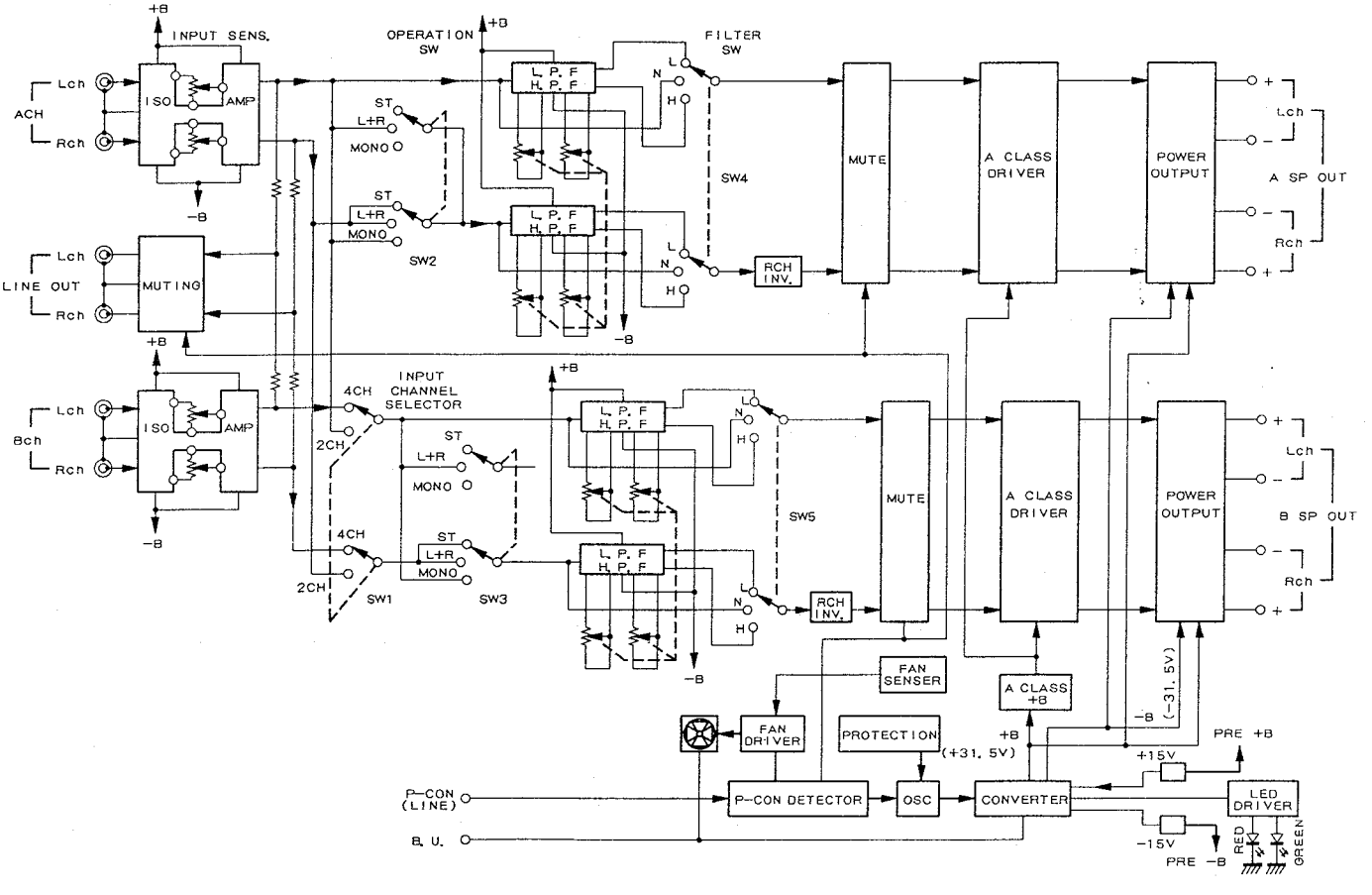


BLOCK LEVEL DIAGRAM

K, M TYPE



E TYPE



CIRCUIT DESCRIPTION

Ref. No.	Parts No.	Use and Function	Operation and Condition
IC101, 102(1/2)	UPC4570HA	Ach-L GND isolation amps	
IC201, 102(2/2)	UPC4570HA	Ach-R GND isolation amps	
IC301, 302(1/2)	UPC4570HA	Bch-L GND isolation amps	
IC401, 302(2/2)	UPC4570HA	Bch-R GND isolation amps	
IC103(2/2), 203(2/2), 104(2/2)	NJM4565L-D	Ach-L Cut-off frequency-variable filters	HPF outputs from IC103 (2/2), 103(1/2), 303 (2/2) and 303 (1/2). LPF outputs from IC104(2/2), 104(1/2), 304(2/2) and 304(1/2).
IC103(1/2), 203(1/2), 104(1/2)	NJM4565L-D	Ach-R Cut-off frequency-variable filters	
IC303(2/2), 403(2/2), 304(2/2)	NJM4565L-D	Bch-L Cut-off frequency-variable filters	
IC303(1/2), 403(1/2), 304(1/2)	NJM4565L-D	Bch-R Cut-off frequency-variable filters	
IC501(1/2)	NJM4565L-D	Ach Rch inverter amps	
IC501(2/2)	NJM4565L-D	Bch Rch inverter amps	
IC1	UPC494C	OSC for DC-DC converter	
IC2	NJM7815FA	+15 V/A regulated power supply	Positive power supply for GND isolation amps, active filters and the first stage of main amp.
IC3	NJM7915FA	-15 V/A regulated power supply	Negative power supply for GND isolation amps and active filters.
IC4 (K, M only)	BA10393N	Comparator which, when the error amp in IC1 operates, generates the output for driving SW transistor Q2 in the muting circuit.	Output 6.5 V during error amp operation, and 0 V in other cases.
Q2	2SC4640T/U-AC	Control of muting and indicator, driver of power SW of main amp voltage amp stage.	For muting operation, goes ON to turn Q4 ON. When Q4 is turned ON, Q17 is turned ON, Q18 is turned OFF so the green indicator lights and red indicator goes out. At this time, Q5 is turned OFF and Q6 is turned OFF so power is not supplied to the power amp stage of main amp.
Q102, 202, 302, 402	2SC4640T/U-AC	Muting of main amp input stage	For muting operation, go ON to attenuate signals input to the main amp.
Q112, 212, 312, 412	2SC4640T/U-AC	Detector of overcurrent due to load short-circuit	When load is short-circuited, goes ON to drive Q22.
Q105, 106, 205, 206, 305, 306, 405, 406	2SC2784F	Differential amp of main amp 2nd stage	
Q109, 209, 309, 409	2SB1473R	Drivers of main amp power amp stage	
Q108, 208, 308, 408	2SD2225R	Drivers of main amp power amp stage	
Q20	2SD2225R	Fan motor SW	At high temperatures, goes ON to supply power to the fan motor.
Q3	DTA124ES	Power SW of IC1, IC4 and fan control circuit	When BATT or P-CON is turned ON, goes ON to supply power to IC1, IC4, fan control circuit and muting signal circuit.
Q4	DTA124ES	Driver of muting transistor and indicator SW transistor	For muting operation, goes ON to drive muting transistors Q101, 201, 102, 202, 302 and 402. This turns Q17 ON and Q18 OFF so the green indicator lights and red indicator goes out.
Q18	DTA124ES	Red indicator SW	ON during normal operation to light the red indicator.
Q107, 207, 307, 407	2SD1200(Q)	Control of idling current in main amp power amp stage (for temperature compensation)	
Q111, 211, 311, 411	2SA1670(O, Y)	Main amp power amp	
Q110, 210, 310, 410	2SC4385(O, Y)	Main amp power amp	
Q9, 10, 11, 12, 13, 14, 15, 16	2SK1257	DC-DC converter current amp	
Q101, 201	2SC4640(T, U)	Line output muting	OFF during normal operation. For muting operation, go ON to attenuate the Line output signals.
Q6	2SA1782T/U-AC	Power SW of main amp voltage amp	OFF during muting operation. In normal operation, go ON to supply power to the main amp.

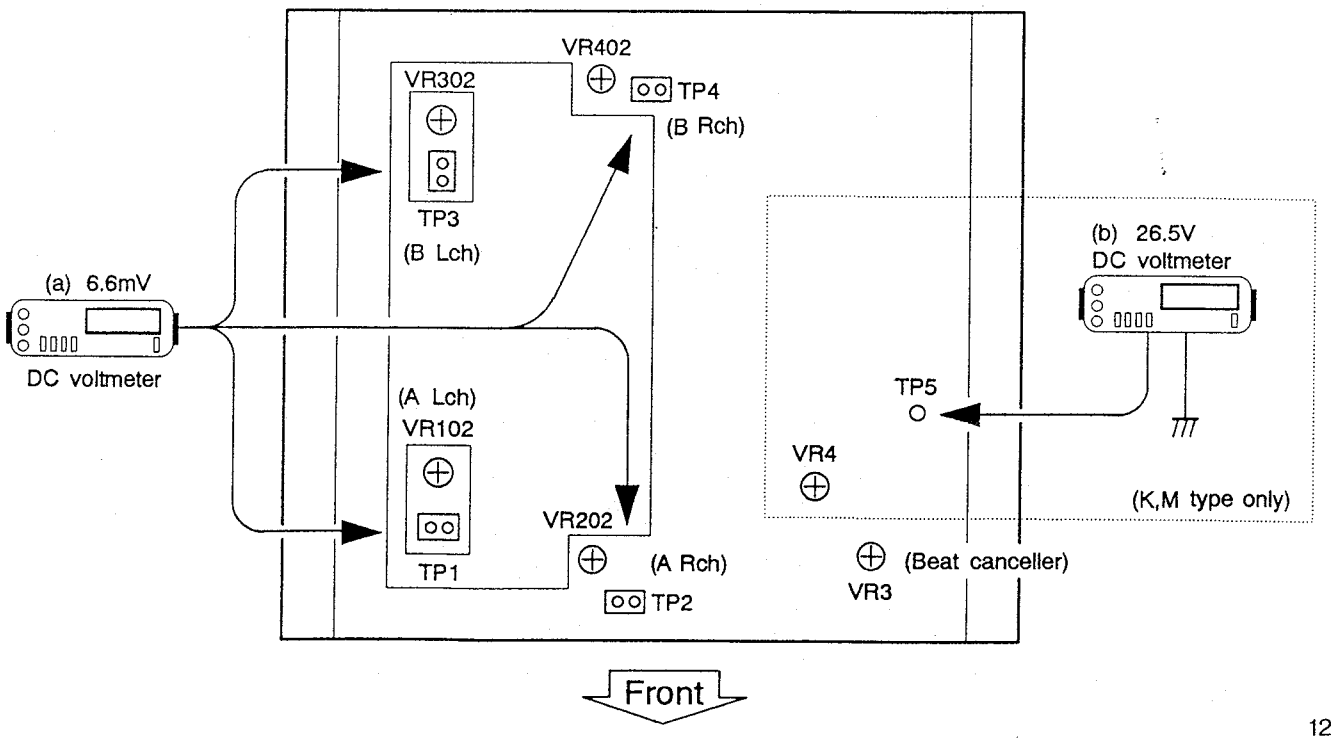
ADJUSTMENT/ABGLEICH

ADJUSTMENT

No	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	CASSETTE RECEIVER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
1	BEAT CANCELLER	–	–	Receive AM BROADCAST STATION	VR3 (MAIN P.C.B)	Only when there is BEAT NOISY SOUND. Ajust to minmal position.	
2	IDLE CURRENT	–	Connect a DC voltmeter to TP1 (A Lch) TP2 (A Rch) TP3 (B Lch) TP4 (B Rch) (MAIN P.C.B)	VOLUME : 0	VR102 (A Lch) VR202 (A Rch) VR302 (B Lch) VR402 (B Rch) (MAIN P.C.B)	6.6mV (30mA)	(a)
POWER SUPPLY (K,M type only)							
[1]	SUPPLY VOLTAGE	Set speaker switch to 4Ω position	Connect a DC voltmeter to TP5	VOLUME : 0	VR4	Adjust to 26.5V	(b)

ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANG-EINSTELLUNG	VORSTÄRKER-EINSTELLUNG	ABGLEICHE-PUNKTE	ABGLEICHEEN FÜR	ABB
1	INTERFERENZEN-UNTERDRÜCKER	–	–	MW-RADIOSENDER emofangen	VR3	Nur wenn INTERFERENZEN oder STÖRGERÄUSCHE vorhanden sing. Auf die minimelposition.	
2	LEERLAUF-STROM	–	Einen Gleichspannungs-messer zu TP1 (A Lch) TP2 (A Rch) TP3 (B Lch) TP4 (B Rch) anschließen.	VOLUME : 0	VR102 (A Lch) VR202 (A Rch) VR302 (B Lch) VR402 (B Rch)	6.6mV (30mA)	(a)

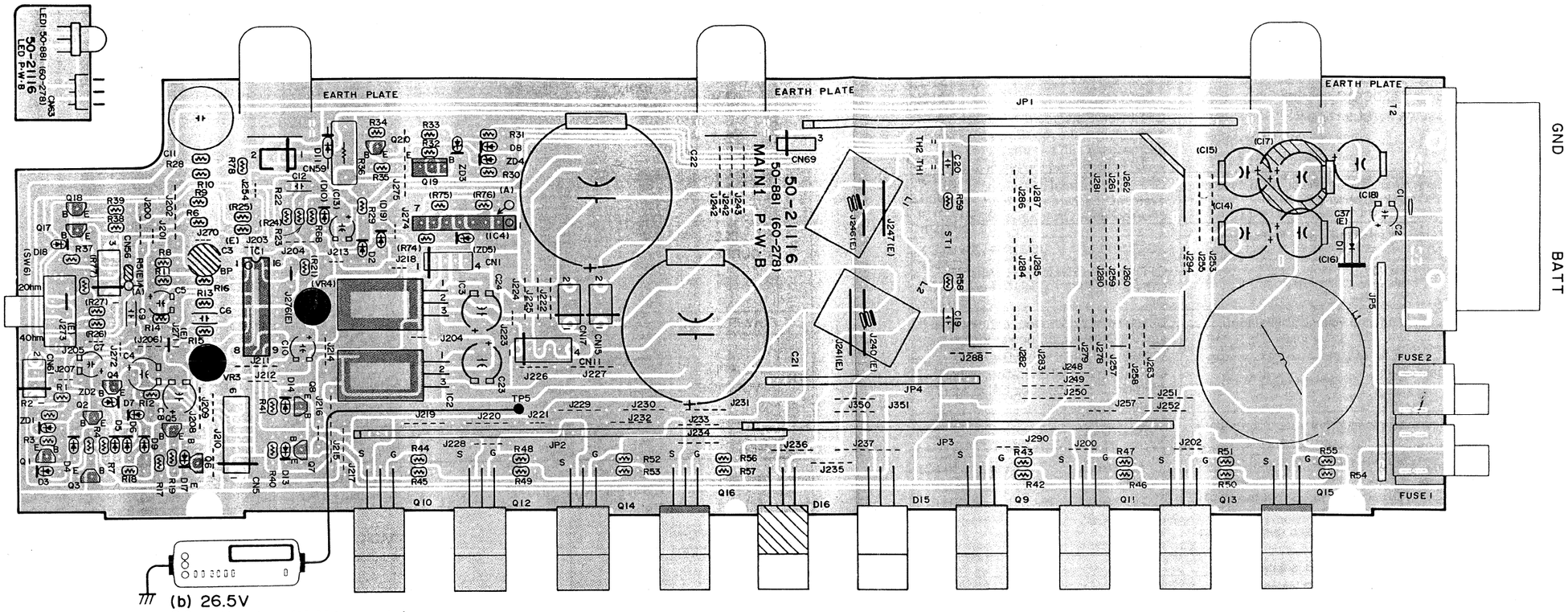


CIRCUIT DESCRIPTION

Ref. No.	Parts No.	Use and Function	Operation and Condition
Q7, 8	2SA1782T/U-AC	Switching drivers of DC-DC converter	
Q19	2SA1782T/U-AC	Control of fan SW transistor Q20	OFF at low temperatures. At high temperatures, the resistance of TH2 decreases to turn this transistor ON, which turns Q20 so the fan is rotated.
Q22	2SA1782T/U-AC	Drive of muting circuit SW transistor Q2 in case of overcurrent due to load short-circuit	OFF during normal operation. In overcurrent occurs when load is short-circuited, goes ON to drive Q2.
Q103, 104, 203, 204, 303, 304, 403, 404	2SA1782T/U-AC	Differential amp circuit of main amp first stage	
Q1	2SC4640T/U-AC	Driver of power SW Q3	OFF while P-CON is OFF. When P-CON is turned ON, goes ON to turn Q3 ON.
Q5	DTC124ES	Power driver of main amp voltage amp stage	During normal operation, turned ON to turn Q6 ON to supply power to the voltage amp stage of main amp.
Q17	DTC124ES	Green indicator SW	OFF during normal operation. When short-circuit occurs, goes ON to light the green indicator.
D15	FMU21S	Rectifier of switching transformer output to output + voltage	
D16	FMU21R	Rectifier of switching transformer output to output - voltage	
D1	RM4ALF-J1	Circuit protection in case of inverse connection of BATT and GND	
LED1	B30-1384-05	Red during normal operation, green during muting operation.	
D101, 102, 104, 105	1SS133	Ach-Lch Static protection of GND isolation amp	
D201, 202, 204, 205	1SS133	Ach-Rch Static protection of GND isolation amp	
D301, 302, 304, 305	1SS133	Bch-Lch Static protection of GND isolation amp	
D401, 402, 404, 405	1SS133	Bch-Rch Static protection of GND isolation amp	
D108, 208	1SS133	Tone correction during Line output muting	
D2	1SS131	Prevention of control circuit malfunction due to fan control circuit	
D3	1SS131	Prevention of Q2 malfunction	
D4	1SS131	Prevention of IC1 malfunction	
D5	1SS131	Prevention of muting transistor malfunction	
D6	1SS131	Prevention of Q5 malfunction	
D7	1SS131	Prevention of IC1 malfunction	
D8	1SS131	Prevention of fan malfunction	
D9	1SS131	Prevention of Q6 malfunction	
D10	1SS131		
D13, 14	1SS131	Protection of DC-DC converter switching driver	
D17	1SS131	Prevention of Q6 malfunction	
D18	1SS131	Prevention of muting transistor malfunction	
D19	1SS131	Prevention of IC1 malfunction	
D20	1SS131	Protection of Q22	
D103, 203, 303, 403	1SS131	Countermeasure against malfunction of transistor detecting overcurrent in case of load short-circuit	
D106, 206, 306, 406	1SS131	Tone correction during muting operation	
D109, 209, 309, 409	1SS131	Countermeasure against malfunction of transistor detecting overcurrent in case of load short-circuit	
D11	DSK10B-BT	Circuit protection against counterrelectromotive force during fan operation	
ZD2	MTZ10J(C)	Countermeasure against muting period variation	
ZD5	MTZ4.3J(A)	Setting of muting operation voltage	
ZD1	MTZ5.1J(B)		
ZD4	MTZ5.1J(B)	Setting of fan operation voltage	
ZD3	MTZ8.2J(B)	Setting of fan control voltage	

Heat sink
(F01-1430-08)

PC BOARD MAIN1 (Component side view)

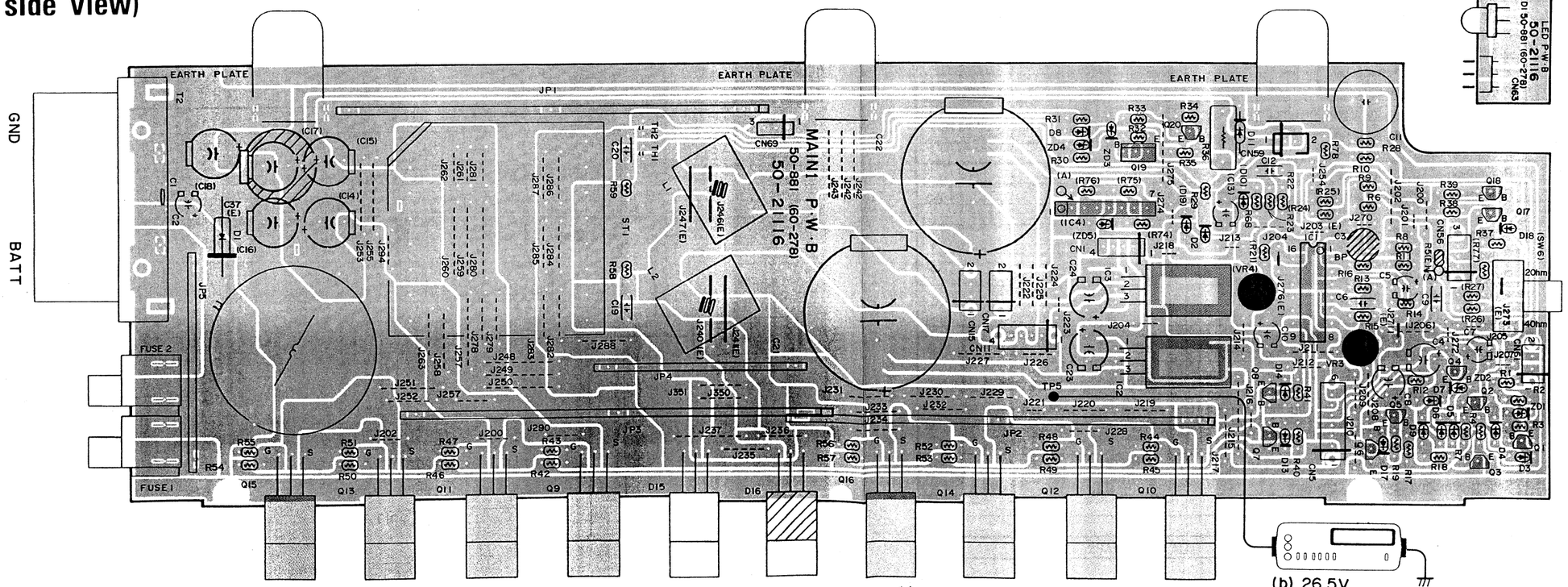


(b) 26.5V
DC voltmeter (K,M type only)

MAIN 1 unit

Ref. No.		Address	
IC	Q	Component Side	Foil Side
	1	3A	6I
	2	3A	6I
	3	3A	6I
	4	3B	6H
	5	3B	6H
	6	3B	6H
	7	3C	6G
	8	3C	6G
	9	3F	6D
	10	3C	6G
	11	3G	6C
	12	3D	6F
	13	3G	6C
	14	3D	6F
	15	3H	6B
	16	3E	6E
	17	2A	5I
	18	2A	5I
	19	2C	5G
	20	2C	5G
1		2B	5H
2		3C	6G
3		2C	5G
4		2D	5G

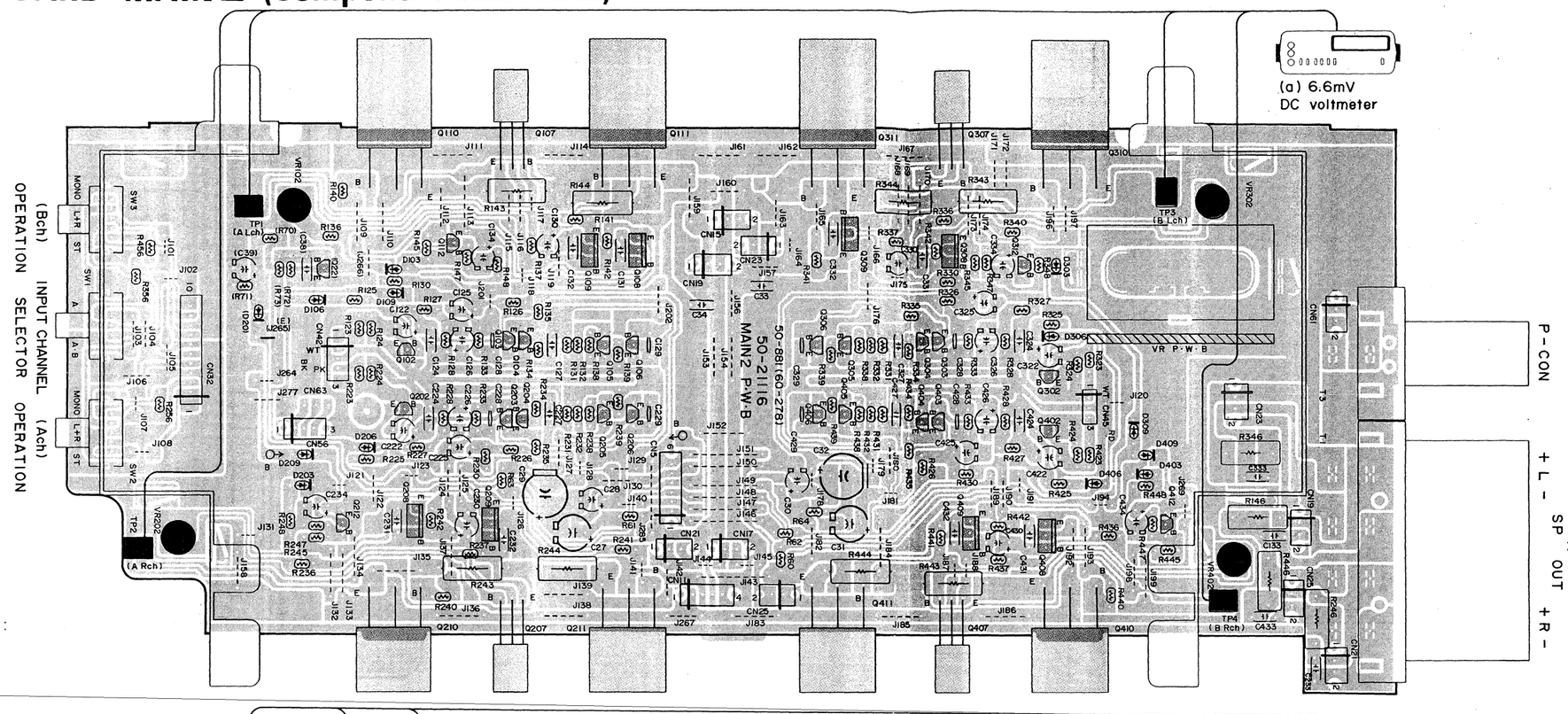
(Foil side view)



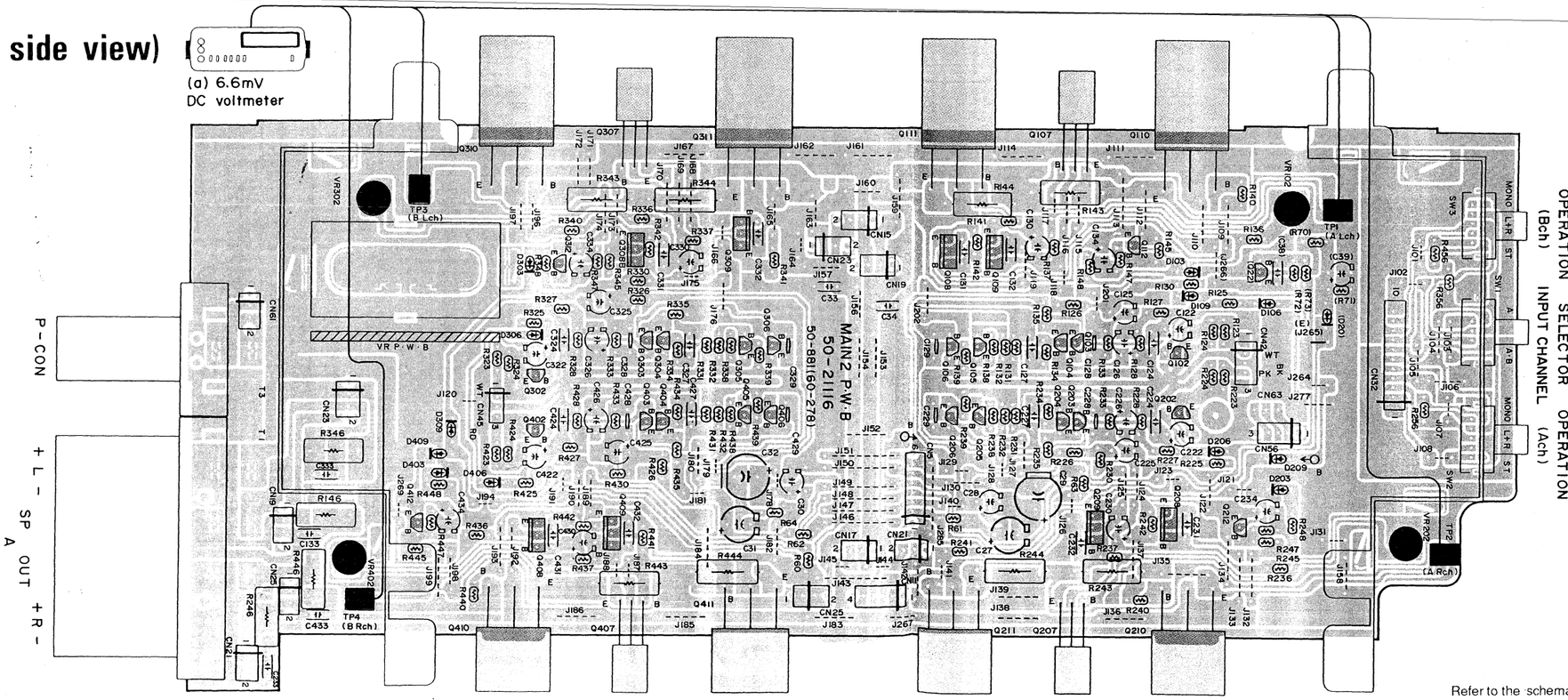
(b) 26.5V
DC voltmeter (K,M type only)

Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD MAIN 2 (Component side view)



(Foil side view)

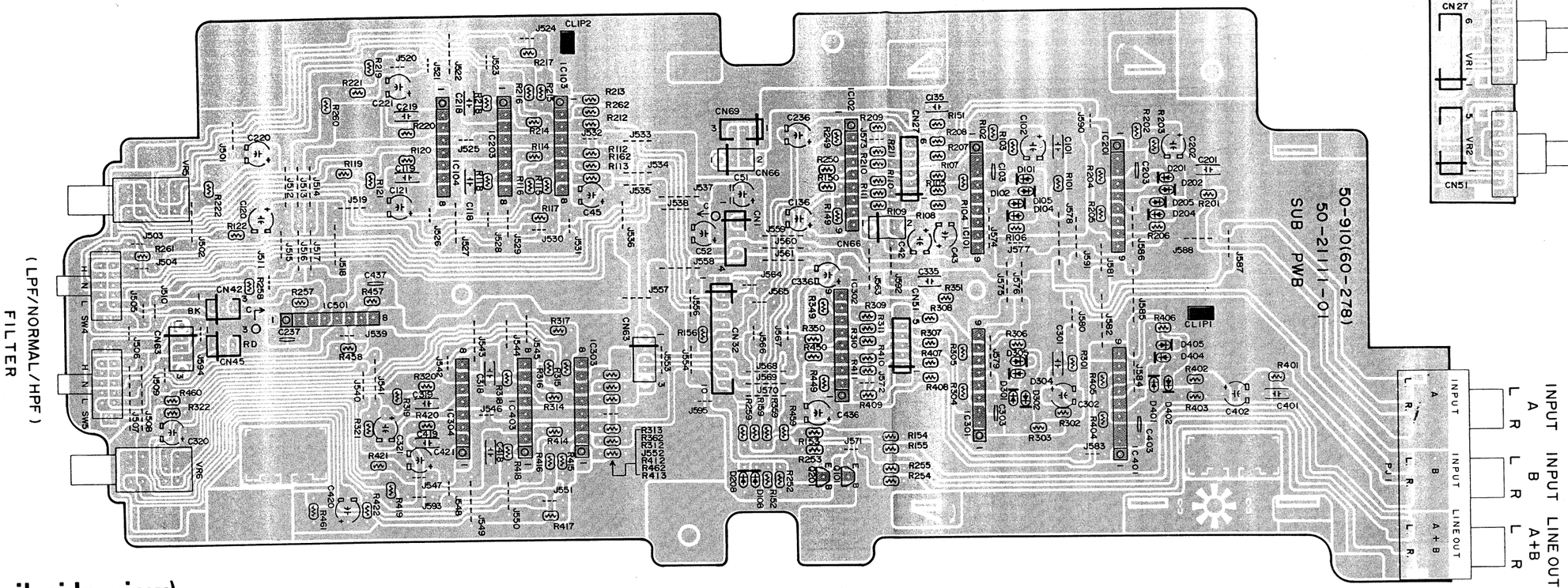


MAIN 2 unit

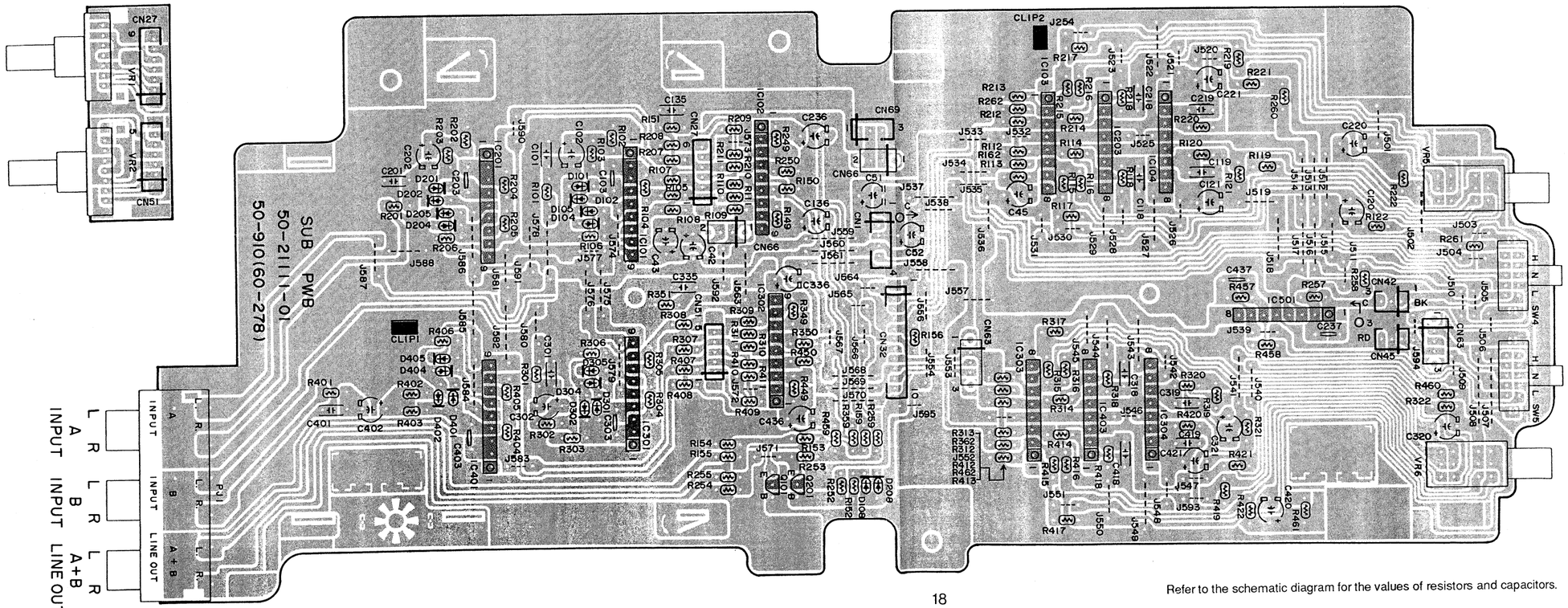
Ref. No.	Address	
Q	Component Side	Foil Side
22	2L	5Q
102	2M	6Q
103	2M	5P
104	2M	5P
105	2N	6P
106	2N	6O
107	1M	4P
108	2N	5O
109	2N	5P
110	1M	4Q
111	1N	4O
112	2M	5P
202	3M	6Q
203	3M	6P
204	3M	6P
205	3N	6P
206	3N	6O
207	4M	7Q
208	3M	6Q
209	3M	6P
210	4M	7P
211	4N	7P
212	3M	6Q
302	2P	6N
303	2O	5N
304	2O	5N
305	2O	5O
306	2O	5O
307	1P	4N
308	2P	5N
309	2O	5N
310	1P	4M
311	1O	4N
312	2P	5N
402	3P	6N
403	3O	5N
404	3O	5N
405	3O	6O
406	3O	6O
407	4P	7N
408	3P	6N
409	3P	6N
410	4P	7M
411	4O	7N
412	3Q	6M

Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD SUB PWB (Component side view)



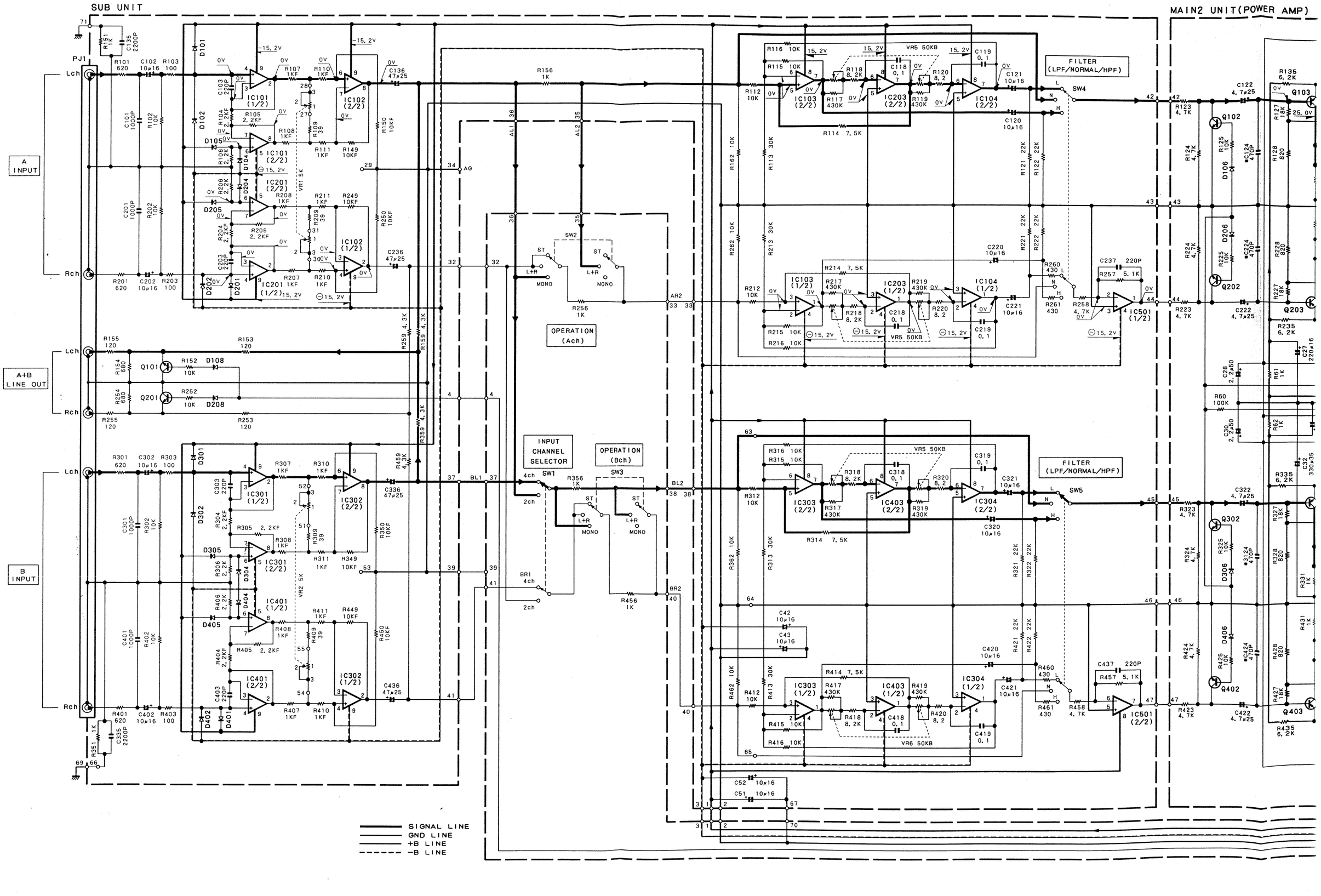
(Foil side view)



SUB PWB unit

Ref. No.		Address	
IC	Q	Component Side	Foil Side
101		2Z	5X
102		2Y	5Y
103		1X	5Z
104		2W	5AA
201		2AA	5W
203		2W	5AA
301		3Z	6X
302		2Y	6Y
303		3X	6Z
304		3W	6AA
401		3AA	6W
403		3X	6Z
501		2W	6AA
	101	3Y	7Y
	201	3Y	7Y

Refer to the schematic diagram for the values of resistors and capacitors.


SUB UNIT
MAIN2 UNIT(POWER AMP)
A INPUT
B INPUT
A+B LINE OUT
PJ1
Lch
Rch
IC101 (1/2)
IC101 (2/2)
IC102 (2/2)
IC102 (1/2)
IC201 (1/2)
IC201 (2/2)
IC301 (1/2)
IC301 (2/2)
IC302 (2/2)
IC302 (1/2)
IC401 (1/2)
IC401 (2/2)
IC103 (1/2)
IC103 (2/2)
IC104 (2/2)
IC104 (1/2)
IC203 (2/2)
IC203 (1/2)
IC303 (2/2)
IC303 (1/2)
IC304 (2/2)
IC304 (1/2)
IC403 (2/2)
IC403 (1/2)
IC501 (1/2)
FILTER (LPF/NORMAL/HPF)
SW4
SW5
SW1
SW2
SW3
INPUT CHANNEL SELECTOR
OPERATION (Ach)
OPERATION (Bch)
VR1 5K
VR2 5K
VR5 50KB
VR6 50KB
Q101
Q201
Q102
Q202
Q103
Q203
Q302
Q402
Q403
SIGNAL LINE
GND LINE
+B LINE
-B LINE

MAIN2 UNIT(POWER AMP)

IC1	:μPC494C
IC2	:NJM7815FA
IC3	:NJM7915FA
IC4	:BA10393N
IC101, 102 201, 301 302, 401	:μPC4570HA
IC103, 104 203, 303, 304 403, 501	:NJM4565L-D

Q1, 2, 102 112, 202, 212 302, 312, 402, 412	:2SC4640T/U-AC
Q3, 4, 18	:DTA124ES
Q5, 17	:DTC124ES
Q6~8, 19, 22 103, 104, 203, 204 303, 304, 403, 404	:2SA1782T/U-AC
Q9~16	:2SK1257
Q20, 108, 208 308, 408	:2SD2225R

Q101, 201	:2SC4640(T, U)
Q105, 106, 205 206, 305, 306 405, 406	:2SC2784F
Q107, 207 307, 407	:2SD1200(Q)
Q109, 209 309, 409	:2SB1473R
Q110, 210 410	:2SC4385(O, Y)
Q111, 211 311, 411	:2SA1670(O, Y)
TH1, 2	:DTN-D103K4D-NHA

D1	:RM4ALF-J1
D2~10, 13 14, , 17~20 101~106, 108 109, 201~206 208, 209 301~306, 309 401~406, 409	:1SS131
D11	:DSK10B-BT
D15	:FMU21S
D16	:FMU21R
D21, 22	:DSK10C
ZD1, 4	:MTZ5.1J(B)
ZD2	:MTZ10J(C)
ZD3	:MTZ8.2J(B)
ZD5	:MTZ4.3J(A)

MAIN UNIT(POWER AMP)

Ref No / ABB	Q22	D20	C38, 39	R71~73
K, M	YES	YES	YES	YES
E	NO	NO	NO	NO

MAIN1 UNIT(POWER SUPPLY)(K, M TYPE)

2SC4640T/U-AC

DTA124ES

DTC124ES

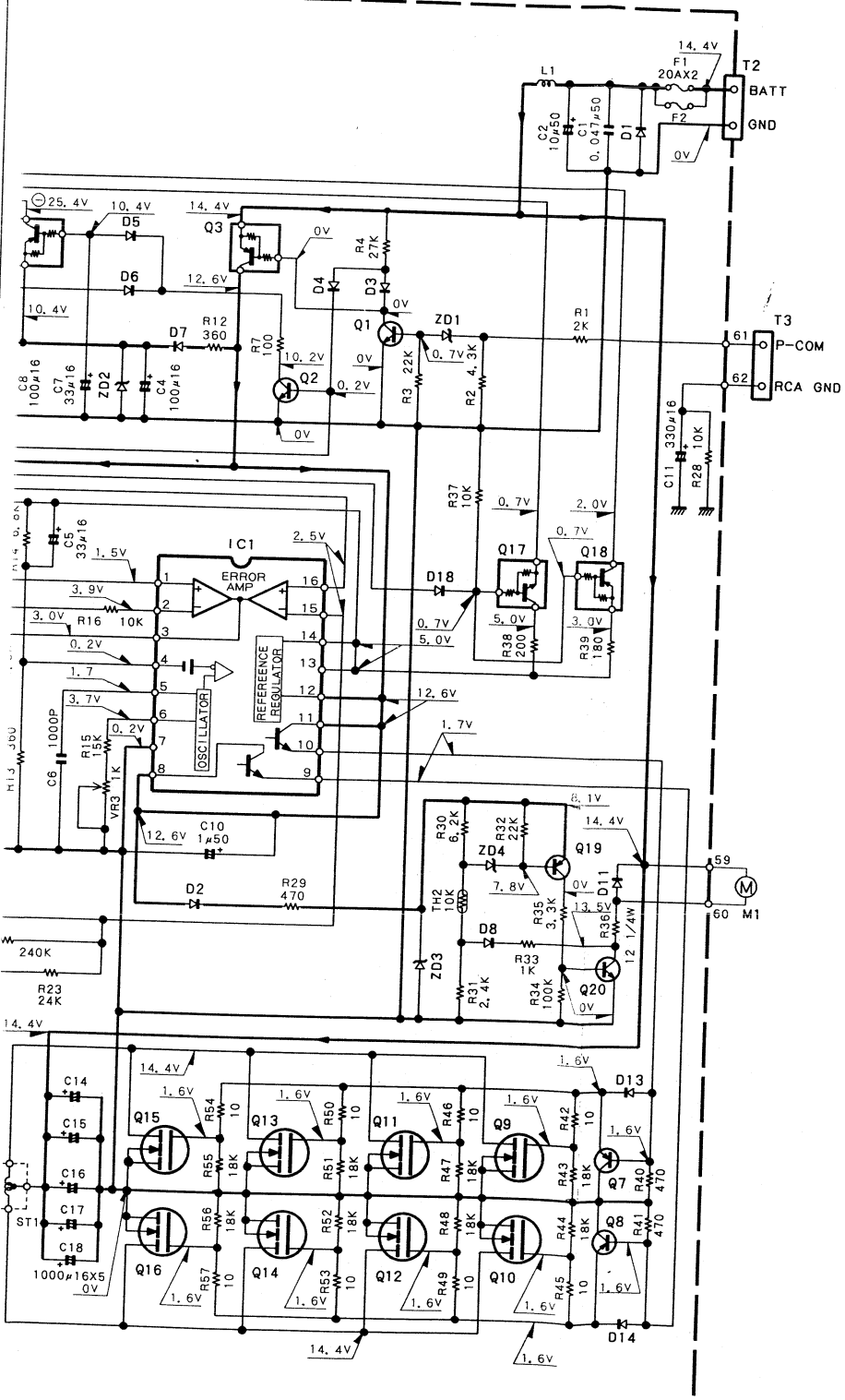
2SA1782T/U-AC

2SK1257

2SD2225R

Q101, 201	:2SC4640(T, U)	
Q105, 106, 205 206, 305, 306 405, 406	:2SC2784F	
Q107, 207 307, 407	:2SD1200(Q)	
Q109, 209 309, 409	:2SB1473R	
Q110, 210 410	:2SC4385(O, Y)	
Q111, 211 311, 411	:2SA1670(O, Y)	
TH1, 2	:DTN-D103K4D-NHA	

D1	:RM4ALF-J1
D2~10, 13 14, , 17~20 101~106, 108 109, 201~206 208, 209 301~306, 309 401~406, 409	:1SS131
D11	:DSK10B-BT
D15	:FMU21S
D16	:FMU21R
D21, 22	:DSK10C
ZD1, 4	:MTZ5. 1J(B)
ZD2	:MTZ10J(C)
ZD3	:MTZ8. 2J(B)
ZD5	:MTZ4. 3J(A)



KAC-943 (1/2)

DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

1/2

KAC-943

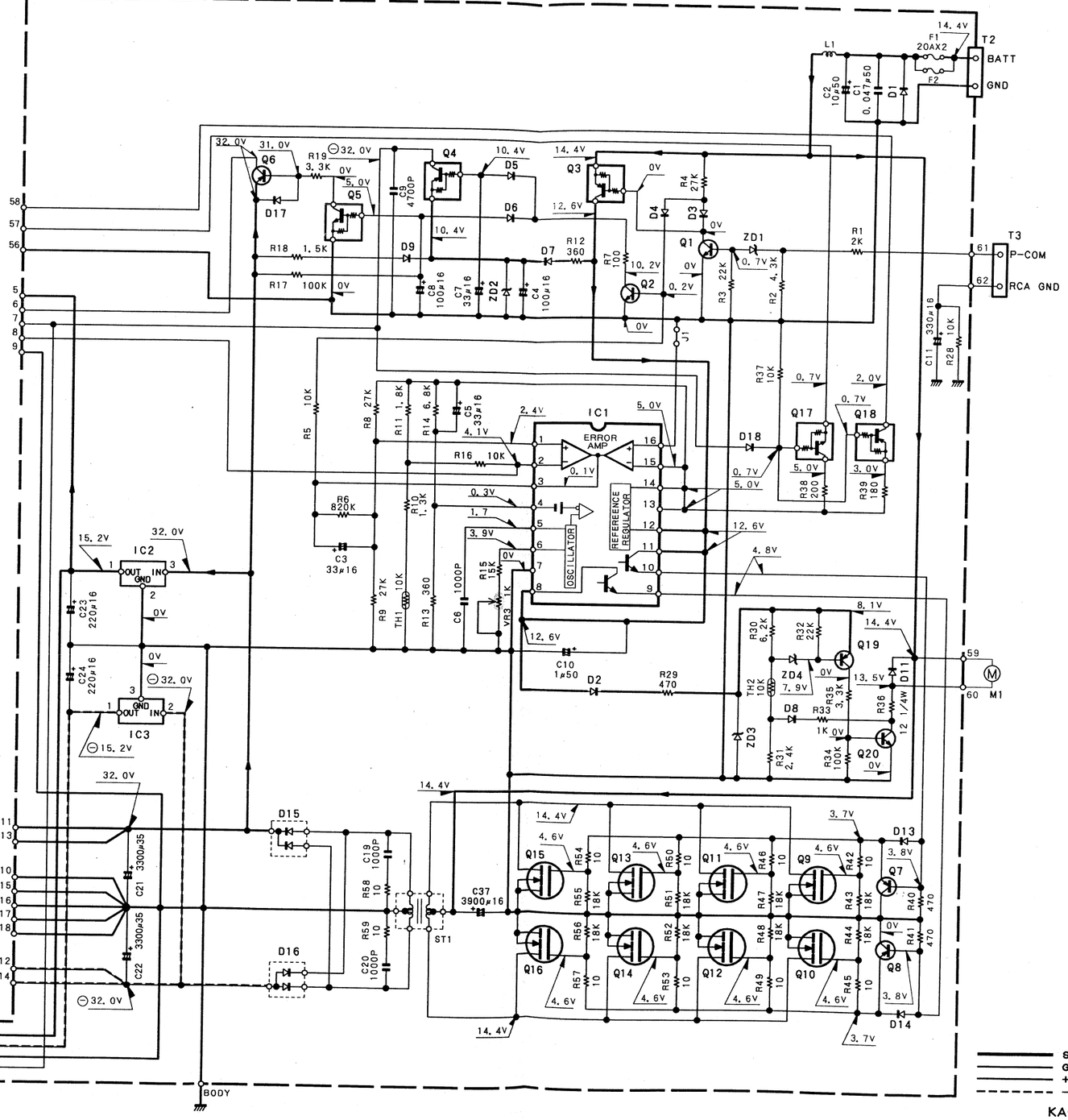
KENWOOD

Y08-6010-10

V | W | X | Y | Z | AA

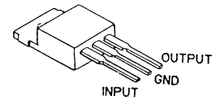
IC1	:μPC494C	Q1, 2	:2SC4640T/U-AC	D2-9, 13, 14 17, 18	:1SS131
IC2	:NJM7815FA	Q4, 18	:DTA124ES	D15	:FMU21S
IC3	:NJM7915FA	Q5, 17	:DTC124ES	D16	:FMU21R
		Q6-8, 19	:2SA1782T/U-AC	ZD1, 4	:MTZ5.1J(B)
		Q9-16	:2SK1257	ZD2	:MTZ10J(C)
		Q20	:2SD2225R	ZD3	:MTZ8.2J(B)

MAIN1 UNIT(POWER SUPPLY) (E TYPE)

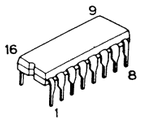


KAC-943(2/2)

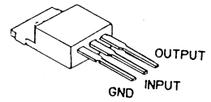
NJM7815FA



UPC494C

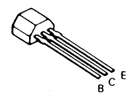


NJM7915FA

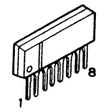


BA10393N

DTA124ES
DTC124ES

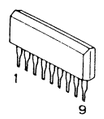


NJM4565L-D



2SA1670
2SC4385

UPC4570HA



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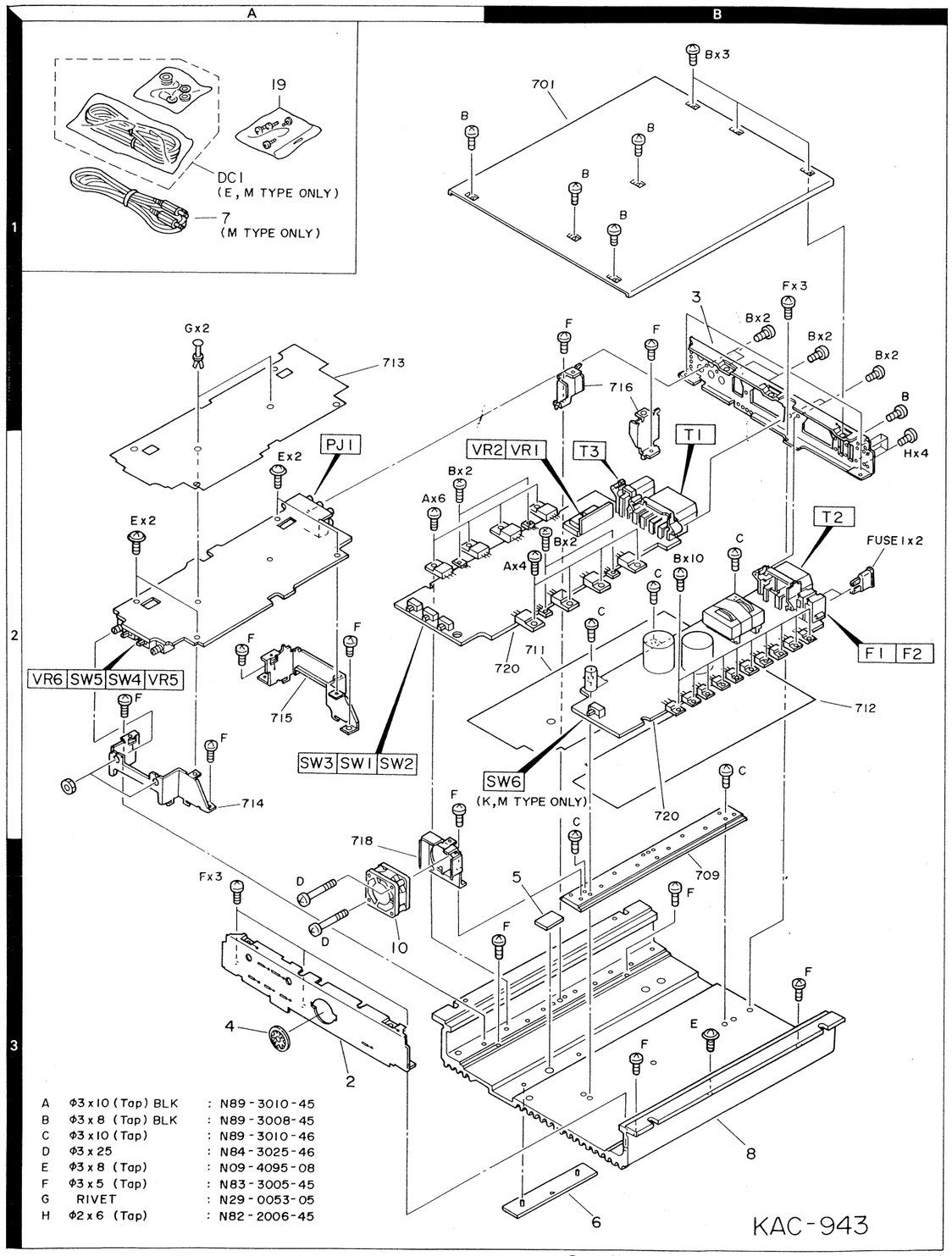
reduce the risk of electric shock, leakage-current or resi
measurements shall be carried out (exposed parts are a
ably insulated from the supply circuit) before the appli
returned to the customer.

Y08-6010-10

KAC-943

KENWOOD

EXPLODED VIEW (UNIT)

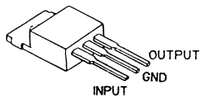


A	Φ3x10 (Tap) BLK	: N89-3010-45
B	Φ3x8 (Tap) BLK	: N89-3008-45
C	Φ3x10 (Tap)	: N89-3010-46
D	Φ3x25	: N84-3025-46
E	Φ3x8 (Tap)	: N09-4095-08
F	Φ3x5 (Tap)	: N83-3005-45
G	RIVET	: N29-0053-05
H	Φ2x6 (Tap)	: N82-2006-45

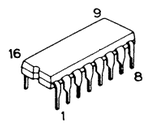
KAC-943

Parts with the exploded numbers larger than 700 are not supplied.

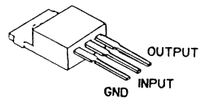
NJM7815FA



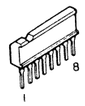
UPC494C



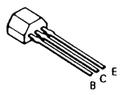
NJM7915FA



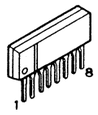
BA10393N



DTA124ES
DTC124ES

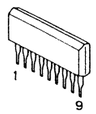


NJM4565L-D



2SA1670
2SC4385

UPC4570HA



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SIGNAL LINE
GND LINE
+B LINE
-B LINE

KAC-943(2/2)

2/2

Y08-6010-10

KAC-943

KENWOOD

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C27			CE04DW1C221M	ELECTRO 220UF 16WV		
C28			CE04DW1H2R2M	ELECTRO 2.2UF 50WV		
C29			CE04DW1V331M	ELECTRO 330UF 35WV		
C30			CE04DW1H2R2M	ELECTRO 2.2UF 50WV		
C31			CE04DW1C221M	ELECTRO 220UF 16WV		
C32			CE04DW1V331M	ELECTRO 330UF 35WV		
C33 ,34			CF92V1H473J	MF 0.047UF J		
C37			C90-2786-08	ELECTRO 3900UF 16WV	E	
C38			CK45FF1H103Z	CERAMIC 0.010UF Z	K,M	
C39			CE04DW1C330M	ELECTRO 33UF 16WV	K,M	
C42 ,43			CE04DW1C100M	ELECTRO 10UF 16WV		
C51 ,52			CE04DW1C100M	ELECTRO 10UF 16WV		
C101			CF92V1H102J	MF 1000PF J		
C102			CE04DW1C100M	ELECTRO 10UF 16WV		
C103		*	C91-2118-08	MF 220PF J		
C118,119			CF92V1H104J	MF 0.10UF J		
C120,121			CE04DW1C100M	ELECTRO 10UF 16WV		
C122			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C124			C91-2117-08	MF 470PF J		
C125			CE04DW1E100M	ELECTRO 10UF 25WV		
C126			CE04DW1A101M	ELECTRO 100UF 10WV		
C127			CF92V1H102J	MF 1000PF J		
C128			CC45FCH1H100J	CERAMIC 10PF J		
C129			CC45FCH1H220J	CERAMIC 22PF J		
C130			CE04DW1E100M	ELECTRO 10UF 25WV		
C131,132			C91-2116-08	MF 100PF J		
C133			CF92V1H473J	MF 0.047UF J		
C134			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C135			CF92V1H222J	MF 2200PF J		
C136			CE04DW1E470M	ELECTRO 47UF 25WV		
C201			CF92V1H102J	MF 1000PF J		
C202			CE04DW1C100M	ELECTRO 10UF 16WV		
C203		*	C91-2118-08	MF 220PF J		
C218,219			CF92V1H104J	MF 0.10UF J		
C220,221			CE04DW1C100M	ELECTRO 10UF 16WV		
C222			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C224			C91-2117-08	MF 470PF J		
C225			CE04DW1E100M	ELECTRO 10UF 25WV		
C226			CE04DW1A101M	ELECTRO 100UF 10WV		
C227			CF92V1H102J	MF 1000PF J		
C228			CC45FCH1H100J	CERAMIC 10PF J		
C229			CC45FCH1H220J	CERAMIC 22PF J		
C230			CE04DW1E100M	ELECTRO 10UF 25WV		
C231,232			C91-2116-08	MF 100PF J		
C233			CF92V1H473J	MF 0.047UF J		
C234			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C236			CE04DW1E470M	ELECTRO 47UF 25WV		
C237		*	C91-2118-08	MF 220PF J		
C301			CF92V1H102J	MF 1000PF J		
C302			CE04DW1C100M	ELECTRO 10UF 16WV		
C303		*	C91-2118-08	MF 220PF J		
C318,319			CF92V1H104J	MF 0.10UF J		
C320,321			CE04DW1C100M	ELECTRO 10UF 16WV		
C322			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C324			C91-2117-08	MF 470PF J		

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C325			CE04DW1E100M	ELECTRO 10UF 25WV		
C326			CE04DW1A101M	ELECTRO 100UF 10WV		
C327			CF92V1H102J	MF 1000PF J		
C328			CC45FCH1H100J	CERAMIC 10PF J		
C329			CC45FCH1H220J	CERAMIC 22PF J		
C330			CE04DW1E100M	ELECTRO 10UF 25WV		
C331,332			C91-2116-08	MF 100PF J		
C333			CF92V1H473J	MF 0.047UF J		
C334			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C335			CF92V1H222J	MF 2200PF J		
C336			CE04DW1E470M	ELECTRO 47UF 25WV		
C401			CF92V1H102J	MF 1000PF J		
C402			CE04DW1C100M	ELECTRO 10UF 16WV		
C403		*	C91-2118-08	MF 220PF J		
C418,419			CF92V1H104J	MF 0.10UF J		
C420,421			CE04DW1C100M	ELECTRO 10UF 16WV		
C422			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C424			C91-2117-08	MF 470PF J		
C425			CE04DW1E100M	ELECTRO 10UF 25WV		
C426			CE04DW1A101M	ELECTRO 100UF 10WV		
C427			CF92V1H102J	MF 1000PF J		
C428			CC45FCH1H100J	CERAMIC 10PF J		
C429			CC45FCH1H220J	CERAMIC 22PF J		
C430			CE04DW1E100M	ELECTRO 10UF 25WV		
C431,432			C91-2116-08	MF 100PF J		
C433			CF92V1H473J	MF 0.047UF J		
C434			CE04DW1E4R7M	ELECTRO 4.7UF 25WV		
C436			CE04DW1E470M	ELECTRO 47UF 25WV		
C437		*	C91-2118-08	MF 220PF J		
PJ1	2A		E63-0817-08	RCA PIN JACK (6P)		
T1	2B		E70-0809-08	TERMINAL (8P)		
T2	2B	*	E70-0812-08	TERMINAL (2P, DC IN)		
T3	2B	*	E70-0813-08	TERMINAL (2P, P_CON)		
F1 ,2	2B		J13-0602-05	FUSE HOLDER		
L1		*	L33-1003-08	CHOKE COIL		
L2 ,3		*	L33-1004-08	CHOKE COIL	K,M	
ST1		*	L19-0534-08	TRANSFORMER	K,M	
ST1		*	L19-0535-08	TRANSFORMER	E	
R36			RS14KB3A120J	FL-PROOF RS 12 J 1W		
R104,105			RN14BK2C2201F	RN 2.20K F 1/6W		
R107,108			RN14BK2C1001F	RN 1.00K F 1/6W		
R110,111			RN14BK2C1001F	RN 1.00K F 1/6W		
R143		*	R92-2119-08	METAL-PLATE 0.22 2W		
R144			R92-2110-08	METAL-PLATE 0.1 K 2W		
R146			RS14KB3A100J	FL-PROOF RS 10 J 1W		
R149,150			RN14BK2C1002F	RN 10.0K F 1/6W		
R204,205			RN14BK2C2201F	RN 2.20K F 1/6W		
R207,208			RN14BK2C1001F	RN 1.00K F 1/6W		
R210,211			RN14BK2C1001F	RN 1.00K F 1/6W		
R243		*	R92-2119-08	METAL-PLATE 0.22 2W		
R244			R92-2110-08	METAL-PLATE 0.1 K 2W		
R246			RS14KB3A100J	FL-PROOF RS 10 J 1W		
R249,250			RN14BK2C1002F	RN 10.0K F 1/6W		

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R304,305			RN14BK2C2201F	RN 2.20K F 1/6W		
R307,308			RN14BK2C1001F	RN 1.00K F 1/6W		
R310,311			RN14BK2C1001F	RN 1.00K F 1/6W		
R343		*	R92-2119-08	METAL-PLATE 0.22 2W		
R344			R92-2110-08	METAL-PLATE 0.1 K 2W		
R346			RS14KB3A100J	FL-PROOF RS 10 J 1W		
R349,350			RN14BK2C1002F	RN 10.0K F 1/6W		
R404,405			RN14BK2C2201F	RN 2.20K F 1/6W		
R407,408			RN14BK2C1001F	RN 1.00K F 1/6W		
R410,411			RN14BK2C1001F	RN 1.00K F 1/6W		
R443		*	R92-2119-08	METAL-PLATE 0.22 2W		
R444			R92-2110-08	METAL-PLATE 0.1 K 2W		
R446			RS14KB3A100J	FL-PROOF RS 10 J 1W		
R449,450			RN14BK2C1002F	RN 10.0K F 1/6W		
VR1 ,2		*	R10-0697-08	POTENTIOMETER (5KBX2)(SENSITI.		
VR3		*	R12-0830-08	TRIMMING POT. (1KB)		
VR4			R12-2627-08	TRIMMING POT. (5KB)	K,M	
VR5 ,6		*	R11-2623-08	POTENTIOMETER (50KC)(FREQUENCY		
VR102			R12-0829-08	TRIMMING POT. (500B)		
VR202			R12-0829-08	TRIMMING POT. (500B)		
VR302			R12-0829-08	TRIMMING POT. (500B)		
VR402			R12-0829-08	TRIMMING POT. (500B)		
SW1			S62-0826-08	SLIDE SWITCH (IN SELECTOR)		
SW2 ,3			S62-0825-08	SLIDE SWITCH (OPERATION)		
SW4 ,5			S62-0825-08	SLIDE SWITCH (FILTER)		
SW6		*	S62-0836-08	SLIDE SWITCH	K,M	
D1		*	RM4ALF-J1	DIODE		
D2 -9			1SS131	DIODE		
D10			1SS131	DIODE	K,M	
D11			DSK10B-BT	DIODE		
D13 ,14			1SS131	DIODE		
D15			FMU21S	DIODE		
D16			FMU21R	DIODE		
D17 ,18			1SS131	DIODE		
D19 ,20			1SS131	DIODE	K,M	
D101,102			1SS133	DIODE		
D103			1SS131	DIODE		
D104,105			1SS133	DIODE		
D106			1SS131	DIODE		
D108			1SS133	DIODE		
D109			1SS131	DIODE		
D201,202			1SS133	DIODE		
D203			1SS131	DIODE		
D204,205			1SS133	DIODE		
D206			1SS131	DIODE		
D208			1SS133	DIODE		
D209			1SS131	DIODE		
D301,302			1SS133	DIODE		
D303			1SS131	DIODE		
D304,305			1SS133	DIODE		
D306			1SS131	DIODE		
D309			1SS131	DIODE		
D401,402			1SS133	DIODE		
D403			1SS131	DIODE		

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D404,405			1SS133	DIODE		
D406			1SS131	DIODE		
D409			1SS131	DIODE		
IC1			UPC494C	IC(SWITCHING REGULATOR)		
IC2			NJM7815FA	IC		
IC3			NJM7915FA	IC		
IC4			BA10393N	IC(DUAL COMPARATOR)	K,M	
IC101,102			UPC4570HA	IC(OP AMP X2)		
IC103,104			NJM4565L-D	IC(OP AMP X2)		
IC201			UPC4570HA	IC(OP AMP X2)		
IC203			NJM4565L-D	IC(OP AMP X2)		
IC301,302			UPC4570HA	IC(OP AMP X2)		
IC303,304			NJM4565L-D	IC(OP AMP X2)		
IC401			UPC4570HA	IC(OP AMP X2)		
IC403			NJM4565L-D	IC(OP AMP X2)		
IC501			NJM4565L-D	IC(OP AMP X2)		
Q1 ,2			2SC4640T/U-AC	TRANSISTOR		
Q3 ,4			DTA124ES	TRANSISTOR		
Q5			DTC124ES	DIGITAL TRANSISTOR		
Q6 -8			2SA1782T/U-AC	TRANSISTOR		
Q9 -16			2SK1257	FET		
Q17			DTC124ES	DIGITAL TRANSISTOR		
Q18			DTA124ES	DIGITAL TRANSISTOR		
Q19			2SA1782T/U-AC	TRANSISTOR		
Q20			2SD2225R	TRANSISTOR		
Q22			2SA1782T/U-AC	TRANSISTOR	K,M	
Q101			2SC4640(T,U)	TRANSISTOR		
Q102			2SC4640T/U-AC	TRANSISTOR		
Q103,104			2SA1782T/U-AC	TRANSISTOR		
Q105,106			2SC2784F	TRANSISTOR		
Q107			2SD1200(Q)	TRANSISTOR		
Q108			2SD2225R	TRANSISTOR		
Q109			2SB1473R	TRANSISTOR		
Q110			2SC4385(O,Y)	TRANSISTOR		
Q111			2SA1670(O,Y)	TRANSISTOR		
Q112			2SC4640T/U-AC	TRANSISTOR		
Q201			2SC4640(T,U)	TRANSISTOR		
Q202			2SC4640T/U-AC	TRANSISTOR		
Q203,204			2SA1782T/U-AC	TRANSISTOR		
Q205,206			2SC2784F	TRANSISTOR		
Q207			2SD1200(Q)	TRANSISTOR		
Q208			2SD2225R	TRANSISTOR		
Q209			2SB1473R	TRANSISTOR		
Q210			2SC4385(O,Y)	TRANSISTOR		
Q210			2SC4385(O,Y)	TRANSISTOR		
Q211			2SA1670(O,Y)	TRANSISTOR		
Q212			2SC4640T/U-AC	TRANSISTOR		
Q302			2SC4640T/U-AC	TRANSISTOR		
Q303,304			2SA1782T/U-AC	TRANSISTOR		
Q305,306			2SC2784F	TRANSISTOR		
Q307			2SD1200(Q)	TRANSISTOR		
Q308			2SD2225R	TRANSISTOR		
Q309			2SB1473R	TRANSISTOR		
Q311			2SA1670(O,Y)	TRANSISTOR		
Q312			2SC4640T/U-AC	TRANSISTOR		

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Q402			2SC4640T/U-AC	TRANSISTOR		
Q403,404			2SA1782T/U-AC	TRANSISTOR		
Q405,406			2SC2784F	TRANSISTOR		
Q407			2SD1200(Q)	TRANSISTOR		
Q408			2SD2225R	TRANSISTOR		
Q409			2SB1473R	TRANSISTOR		
Q410			2SC4385(Q,Y)	TRANSISTOR		
Q411			2SA1670(Q,Y)	TRANSISTOR		
Q412			2SC4640T/U-AC	TRANSISTOR		
TH1 ,2			DTN-D103K4D-NHA	POSITIVE RESISTOR		
ZD1 ,4			MTZ5.1J(B)	ZENER DIODE		
ZD2			MTZ10J(C)	ZENER DIODE		
ZD3			MTZ8.2J(B)	ZENER DIODE		
ZD5			MTZ4.3J(A)	ZENER DIODE	K,M	

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SPECIFICATIONS

•K, M TYPE

Audio Section

Max Power Output (4 Ω)
- 4 Channel Mode ..... 110 W × 4
- 3 Channel Mode ..... 110 W × 2 + 220 W
- 2 Channel Mode ..... 220 W × 2

Rated Power Output at 12 V (4 Ω)
- 4 Channel Mode ..... 50 W × 4 (20 Hz~20 kHz, less than 0.05% THD)
- 3 Channel Mode ..... 50 W × 2 (20 Hz~20 kHz, 0.05%) + 130 W × 1 (1 kHz, 0.3%)
- 2 Channel Mode ..... 130 W × 2 (1 kHz, 0.3% THD)

Rated Power Output (2 Ω)
- 4 Channel Mode ..... 65 W × 4 (1 kHz, 0.3% THD)

Frequency Response ..... 2 Hz~45 kHz (– 3 dB)
Signal to Noise Ratio ..... 105 dB
Sensitivity (MAX.) ..... 0.15 V (rated output)
Sensitivity (MIN.) ..... 3.0 V (rated output)
Input Impedance ..... 10 kΩ
Damping Factor (100 Hz) ..... More than 100
High pass filter frequency (12 dB/oct.) ..... 30 Hz~200 Hz (variable)
Low pass filter frequency (12 dB/oct.) ..... 30 Hz~200 Hz (variable)

General

Operating Voltage ..... 12 V (11~16 V allowable)
Current Consumption (1 kHz, 10% THD) ..... 40 A
Dimensions (W × H × D) ..... 300 × 56 × 290 mm (11-13/16 × 2-3/16 × 11-7/16 in.)
Weight ..... 3.9 kg (19.9 lb)

•E TYPE

Audio Section

Max Power Output (4 Ω)
- 4 Channel Mode ..... 100 W × 4
- 3 Channel Mode ..... 100 W × 2 + 200 W
- 2 Channel Mode ..... 200 W × 2

Rated Power Output at 12 V (4 Ω)
- 4 Channel Mode ..... 50 W × 4 (20 Hz~20 kHz, less than 0.05% THD)
- 3 Channel Mode ..... 50 W × 2 (20 Hz~20 kHz, 0.05%) + 120 W × 1 (1 kHz, 0.3%)
- 2 Channel Mode ..... 120 W × 2 (1 kHz, 0.3% THD)

Rated Power Output (2 Ω)
- 4 Channel Mode ..... 60 W × 4 (1 kHz, 0.3% THD)

Frequency Response ..... 2 Hz~45 kHz (– 3 dB)
Signal to Noise Ratio ..... 105 dB
Sensitivity (MAX.) ..... 0.15 V (rated output)
Sensitivity (MIN.) ..... 3.0 V (rated output)
Input Impedance ..... 10 kΩ
Damping Factor (100 Hz) ..... More than 100
High pass filter frequency (12 dB/oct.) ..... 30 Hz~200 Hz (variable)
Low pass filter frequency (12 dB/oct.) ..... 30 Hz~200 Hz (variable)

General

Operating Voltage ..... 14.4 V (11~16 V allowable)
Current Consumption (1 kHz, 10% THD) ..... 40 A
Dimensions (W × H × D) ..... 300 × 56 × 290 mm
Weight ..... 3.8 kg

KENWOOD follows a policy of continuous advancements in development.
For this reason specifications may be changed without notice.

KENWOOD poursuit une politique de progrès constants en ce qui concerne le développement.
Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

KENWOOD strebt ständige Verbesserungen in der Entwicklung an.
Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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